

# The Iron Age

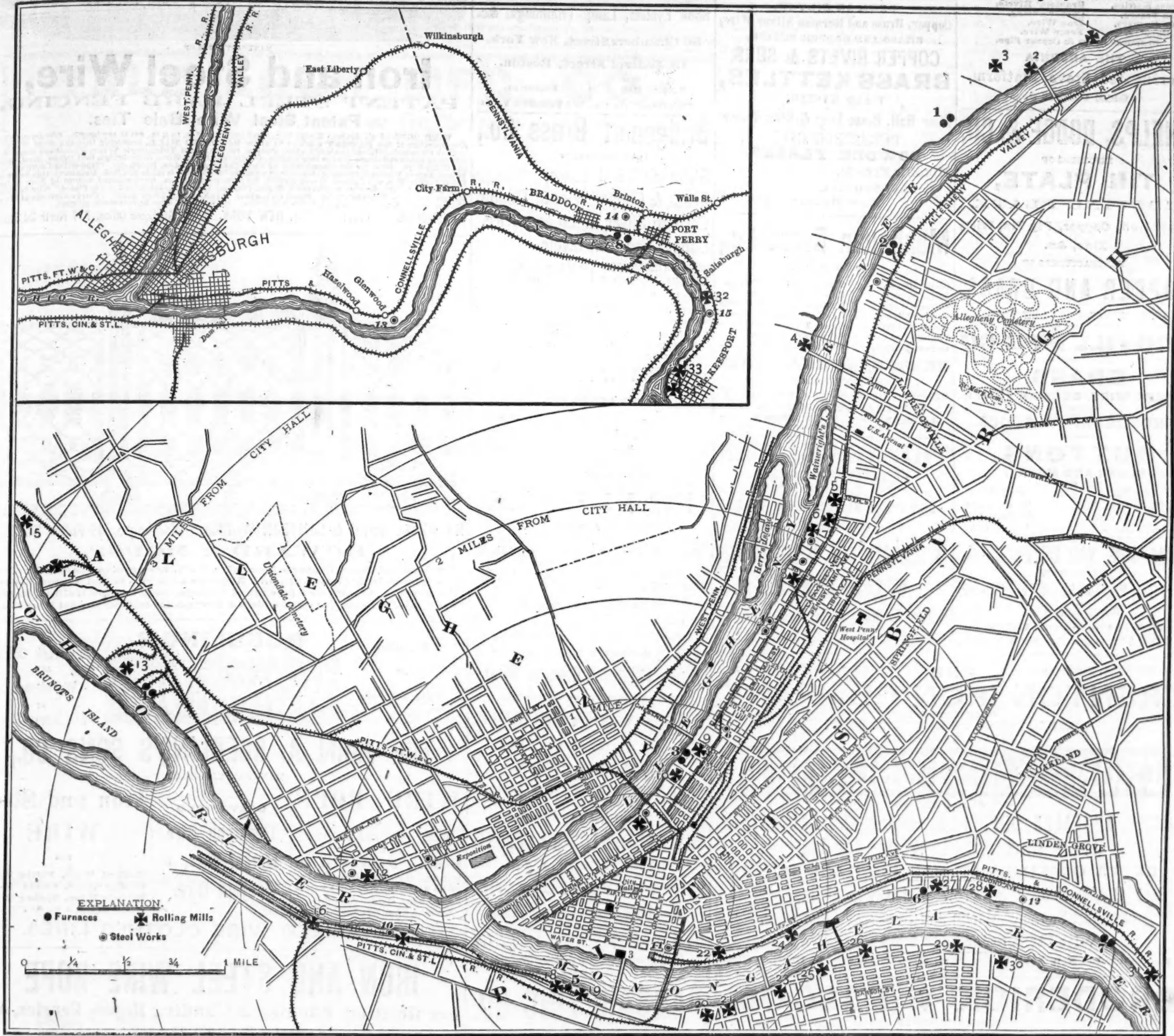
A Review of the Hardware, Iron and Metal Trades.

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MAP OF PITTSBURGH, SHOWING THE LOCATION OF ITS FURNACES, ROLLING MILLS AND STEEL WORKS.

[See Third Page.]

## List of Blast Furnaces, Marked \*

Map No.	Name of Furnace.	Name of Owner.	When Built.	Hight.	Dia. of Boshes.	Cap. pr. w.k.
1...	Isabella, No. 1.	Isabella Furnace Co.	1872	75	18	1515
2...	Isabella, No. 2.	Isabella Furnace Co.	1872	75	20	1515
3...	Lucy, No. 1.	Lucy Furnace Co.	1872	75	20	1515
4...	Lucy, No. 2.	Lucy Furnace Co.	1872	75	20	1515
5...	Shoenberger, No. 1.	Shoenberger, Blair & Co.	1865	62	13 1/2	450

## List of Rolling Mills, Marked \*

No.	Name of Works.	Owner or Lessee.	When Built.	No. of P.F.	No. of Mach's.	Annual Capac.
1...	Vesuvius.	Lewis, Dalzell & Co.	1846	24	50	12,000
2...	Etina, New.	Spang, Chalfant & Co.	1873-74	24	19	20,000
3...	Etina, Old.	Graff, Bennett & Co.	1866	24	19	20,000
4...	Millvale.	Graff, Bennett & Co.	1869	19	19	8,000
5...	Solar.	Wm. Clark & Co.	1869	19	19	8,000
6...	Union Iron.	Carnegie Bros. & Co.	1862	21	21	27,000
7...	Fort Pitt.	John Graff.	1862	20	20	20,000
8...	Union Forge & Iron.	Wilson, Walker & Co.	1862	15	15	9,000
9...	Junata.	Shoenberger & Co.	1862-57	30	30	18,000
10...	Sable.	Zug & Co.	1845	34	34	18,000
11...	Wayne.	Brown & Co.	1820	28	28	10,000
12...	Star.	Lindsay & McCutcheon.	1862	19	19	8,000

\* This mill has no ordinary furnaces, but has five Siemens puddling furnaces.  
† This mill has 11 Danks furnaces in addition.  
‡ Included with Clinton No. 12.

§ Including the Monongahela No. 23.  
|| Included with the Allegheny No. 14.  
¶ Makes spikes only.

\*\* Makes only nails and tacks.  
†† Building; has only Siemens furnaces.

## List of Steel Works, Marked \*

Map No.	Name of Works.	Owner.	When Built.	No. of Siemens Pot. Furnaces.	No. of Coke Holes.	Total No. Pots.	Open Hearth Furnaces.	Bessemer Converters.	Total Annual Capacity.
1...	Crescent.	Miller, Metcalf & Parkin.	1867	4	24	24	44	..	4,000
2...	Fort Pitt.	John Graff.	1862	4	24	24	44	..	4,000
3...	Black Diamond.	Park, Brother & Co.	1862	6	24	30	32	..	15,000
4...	Pittsburgh St. Cast.	Pittsburgh Steel Casting Co.	1871	2	..	2	48	..	2,000
5...	Hussey, Binns & Co.	Hussey, Binns & Co.	1875	1	..	1	24	..	3,000
6...	Hussey, Howe & Co.	Hussey, Howe & Co.	1879	6	..	6	96	..	18,000
7...	Wayne.	Brown & Co.	1820	..	24	24	48	..	3,500
8...	Nellis Agricultural.	A. J. Nellis.	1870	..	10	10	20	..	500

The buildings marked in the Map are: 1. Seventh Avenue Hotel. 2. Office of The Iron Age and Western Iron and Nail Associations. 3. Monongahela House.



**Metals.**  
**ANSONIA**  
**BRASS & COPPER CO.,**  
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Finished Brass, Finished Copper, Copper Rivets & Burs, Brass Rivets & Burs, Brass Kettles, Brass Tubing, Lamp Burners, Sanitary, Seamless Brass & Copper Pipe.

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SEE PAGE 9.

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OF ALL GRADES,  
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EXTRA QUALITIES OF BAR IRON AND RODS.  
Best Qualities of Gun-Screw and Charcoal Iron Wire;  
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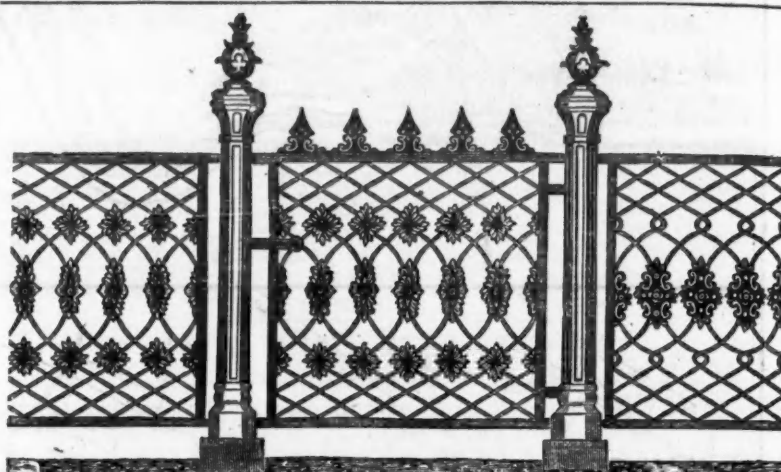
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TROY, N. Y. **ALL KINDS OF WIRE.**





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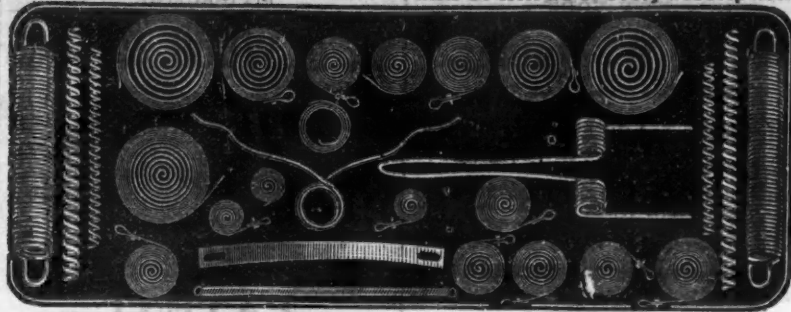
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Being the inventors and patentees of BIRD METAL CAGES, constructed without solder, we are enabled to sell our Brass and Tin-Plated Cages cheaper than any other manufacturers.

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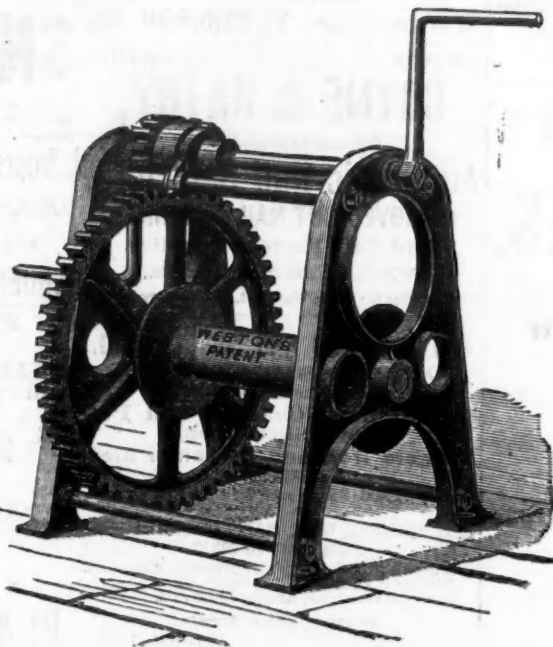
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CANNOT

Fly Back.

ACCIDENTS IMPOSSIBLE.



THE HANDLES

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Fly Back.

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With Patent Disk Safety Brake.

In the **WESTON CRAB** the handles cannot recoil on the operator. To lower the load it is necessary to wind the handles backward. It will continue to descend so long as this is done, but will at once *come to rest automatically* if the handles be let go either in hoisting or lowering.

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Manufacture WIRE RAILING for Cemeteries, Balconies, &c.; Sieves, Fenders, Cages, Sand and Coal Screens, Woven Wire, Iron Bedsteads, Chairs, Scaffolds, &c.



**PAT'D**  
Nov. 12,  
Dec. 17,  
1878.

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MANUFACTURERS.  
Send for Catalogue. BUFFALO, N. Y.



**FRED. J. HOYT**  
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ESTABLISHED 1810.

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A specialty for sizes used in the manufacture of  
Cheese Vats,  
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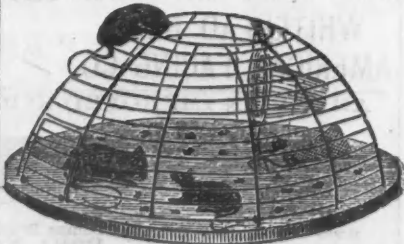
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Sheet Tin,  
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### PITTSBURGH:

#### Its Blast Furnaces, Rolling Mills and Steel Works.

We print on our first page a map showing the location of the blast furnaces, rolling mills and steel works of the city of Pittsburgh. To those who visit the city during the meetings of the American Iron and Steel Association and of the American Institute of Mining Engineers, this will furnish a convenient and reliable guide to these works. The excursions of the Institute will include visits to many of these establishments, and those that are so situated as not to be on the programme, will probably be open to the visits of members.

The beginning of this century marks the commencement of the iron industry of Pittsburgh. It is well authenticated that a small blast furnace—Anschuts's—was erected in 1792, at a point in Pittsburgh now known as Shady Side, some three miles from the Union Depot on the Pennsylvania Railroad, but it was abandoned in 1794. Though the date of the erection of this furnace was in the last century, it was so soon permanently abandoned, and the blast furnace industry in Allegheny County was so long dormant—until 1859—that it is fair to say that Pittsburgh's iron industry dates no further back than the beginning of the century.

The establishment of iron works at this point was doubtless due to two causes—first, its location with reference to water transportation, both in the receipt of the raw material—pig iron—and for the forwarding of the manufactured product to the West. The pig iron at first used in its mills was brought in part from the neighboring counties, but much of it was brought from the Juniata Valley to Johnstown, and floated with the spring and fall freshets to Pittsburgh. The second cause was its supply of easily mined coal.

The exact date of the establishment of the first iron works in Pittsburgh we cannot give. A foundry was built in 1803 by Jas. McClurg, on the site of the present post-office, and in 1807 there were three nail factories in the city. In 1810 about 200 tons of cut and wrought nails were made. In 1813 there was a steel furnace owned by Tupper & McKowan, and a rolling mill owned by Christopher Cowan. This mill was built in 1812, but did not puddle. It was at the corner of Penn avenue and Cecil alley, where the Fourth Ward School House now stands. The first patent nail machine used in Pittsburgh is said to have been in this mill in 1814. The second rolling mill in the city was the Union, on the Monongahela, built in 1819, but accidentally blown up and dismantled in 1829. This mill had four puddling furnaces, the first in Pittsburgh. It was also the first mill in Pittsburgh to roll bar iron.

From the time of the abandonment of the Anschuts Furnace to 1859, there were no blast furnaces in Pittsburgh. In October of that year the Clinton Furnace of Graff, Bennett & Co. was blown in. The absence of native ores was the cause of the interregnum. To-day the largest and best blast furnaces of the country are in Pittsburgh, the ores used being mainly Lake Superior.

Steel began to be made in Pittsburgh, as before noticed, in 1813. In 1829, an Englishman named Broadmeadow, and his sons, made blister steel, and in 1831 pot steel of a low grade. Josiah Ankrim & Son, file makers, are said to have succeeded in making cast steel for their own use in 1830. In 1852 McKelvey & Blair made good cast steel, but not the best, and in 1853 Singer, Nimick & Co., and in 1855 Isaac Jones produced cast steel for saws, machinery and agricultural purposes, but not tool steel. In 1859, Hussey, Wells & Co. successfully made crucible cast steel of the best quality as a regular product, and three years later Park Bro. & Co.

Without tracing the development of these industries further, we present below the list of the various blast furnaces, rolling mills and steel works in Allegheny County at the present time. Of the blast furnaces, all are now in operation, except the Superior, which have been out of blast since 1874, and those of the Edgar Thomson Steel Company, Limited, which are now in course of construction. (There are three of the latter, but by accident only two are marked in the map.) Of the rolling mills, the Vesuvius, Fort Pitt, Eagle, Ormsby, Birmingham and Pittsburgh Bolt are idle. The New Etna has never run, and the mill of the National Tube Works at McKeesport is in process of construction. The steel works are all in operation, except Fort Pitt and Blair. The Shoenberger & Co. open-hearth works are in course of construction, and will soon be in operation. It is located near the Juniata rolling mill, (see map No. 9) belonging to the same firm.

In numbering the different works on the map, the plan has been to give each class of works a series of its own—as Blast Furnace No. 1, No. 2, &c.; Rolling Mill No. 1, No. 2, &c.; Steel Works No. 1, No. 2, &c., and to designate each by a distinct mark, the blast furnaces being represented by a black cross, and the steel works by a circle with a point in the center. In each case these numbers begin with the works highest up the Allegheny River, which will be found near the top and middle of the map. From this point they are numbered down the Allegheny and Ohio, and up the Monongahela River. The numbers of the small map follow after those on the Monongahela River.

From these tables it will be seen that there are in Allegheny County 12 completed blast furnace stacks, and 3 in course of construction, with a weekly capacity of those completed of over 6500 tons, which will be increased by those now in course of construction to fully 8000 tons. There are 34 rolling mills, with 774 common, 11 Danks and 10 Siemens puddling furnaces, and a yearly capacity of 443,000 net tons of finished iron, in which is included some 1,000,000 kegs of nails. In addition to this there are a number of puddling furnaces in the steel mills. Miller, Metcalf & Parkin, have a Swindell patent gas puddling furnace, which does the work of four or five ordinary puddling furnaces. The remaining steel works have 35 puddling furnaces of the ordinary kind.

There are 15 steel works, of which 12 make crucible steel, 5 open hearth, or are preparing to make this grade, and one Bessemer steel. The total capacity of these works is 185,400 net tons. In addition to the works named, the Sligo rolling mill make puddled steel.

It is but just to say that we are indebted to the various publications of Mr. Jas. M. Swank, the able secretary of the American Iron and Steel Association, for most of the historical and statistical data contained in this article.

The American Iron and Steel Association have just published the following interesting statistics of the Pittsburgh iron trade, showing the production of Allegheny County during the years 1877 and 1878 in net tons:

	1877.	1878.
Pig iron.....	147,749	217,299
Pig iron unsold, December 31.....	6,470	10,080
Bars, angles, bolts, rods and hoops.....	26,171	28,428
Plates and sheets.....	30,554	33,445
Nails in kegs.....	597,806	444,013
Iron rails.....	2,172	2,439
Bessemer steel rails.....	54,685	72,246
Bessemer steel ingots.....	58,856	74,685
Crucible cast steel.....	73,278	99,344
Open-hearth steel ingots.....	24,747	27,806
All other steel.....	800	1,005
	8,323	6,579

#### The Iron Lighthouse for American Shoal, Florida.

Of late years iron has come into extensive use in the construction of lighthouses in positions suitable for the employment of the material, whether on shore or on outlying shoals, on the ground of economy, ease of transport or facility for erection. One of the most remarkable iron erections is the Fowey lighthouse on the Florida reefs, which came into operation last summer, and is undoubtedly one of the strongest on the American coast. Another iron lighthouse is now in course of construction by the Phoenix Iron Company, at their works, Trenton, N. J., to be erected on what is known as American Shoal, one of the Florida coral reefs, a few miles to the southeast of Key West, where it will stand in about five feet of water. Previous to its transfer to the Lighthouse Board, the structure will be erected entire at the company's works, and so for short time will constitute a conspicuous and handsome object on the banks of the Delaware. It is being rapidly proceeded with, and will be completed in about two months. It will be an iron skeleton structure, composed of piles and columns braced and tied laterally and radially, forming a rigid system, at the same time obstructing the winds and waves as little as possible. The top of the structure will be surmounted by a lantern, from which a sea light of the first order will be exhibited.

The foundation will be formed of nine wrought-iron piles 12 inches in diameter, driven 10 feet into the shoal; eight of them will be driven at equal distances from the ninth or central one, forming in plan the figure of a regular octagon. Each pile will be provided with a cast-iron disk 7 feet in diameter, which will rest on the surface of the shoal, and through the hub of which the pile will be driven vertically until it reaches a firm bearing on the disk. The tops of the piles will then be cut off to the proper level, and capped with heavy castings, which will be so made that the upper parts will form sockets for the reception of the lower end of the inclined columns, and enable the system to be braced and tied laterally and radially by horizontal braces and diagonal tie-rods. On the foundation thus formed the superstructure will be built, in the form of a truncated octagonal pyramid.

The first series of the system will be braced and tied in a similar manner, but the columns will be only 10 inches in thickness. Two stairways on opposite sides of the structure will provide access from this series to the base of the series above.

The second series will only differ from the one below in having the columns of cast iron and in the radial bracing. The dwelling of the keepers will be built in this series, and the whole floored over with cast-iron plates. The latter will be extended out so as to form a gallery around the building. Two sets of boat cranes for the boats will be manipulated from this gallery. The dwelling for the keepers will be one story, with mansard roof, divided into eight rooms, the water tanks being suspended under the floor. A stairway inclosed in a cylinder will start from the floor of the house and be continued to the watch room. The third and fourth series are similar in construction to the first, except in dimensions and in the replacing of the central column by a stair cylinder, which will inclose the stairway leading to the lantern.

Above the fourth series will be the service room, surmounted by a first-order lantern. The lighthouse will be reached by two sets of ladders leading from the stairways of the first series on opposite sides of the house. The circumscribed diameter of foundation through centers of piles will be 56 feet; the circumscribed diameter through centers of columns immediately below the architrave ring of service room, will be 16 feet.

Owing to their immense weight, the iron shoes in which rest two of the spans of the long railroad bridge at Easton, Pa., lately sunk about an inch, throwing the bridge out of grade. As it was certain that the depression would continue, owing to the fact that the inside masonry of the pier is less solid than the outside, an iron casting 12 feet long, 3 feet 3 inches wide and 3 inches thick, weighing 7000 pounds, was recently successfully placed under the spans, in order to elevate them. The spans weigh 180 tons each. Hydraulic jacks were used. The spans were raised, the masonry redressed, the castings placed in position and the spans lowered without the stoppage of a single train.

The St. Petersburg papers report a great development of the gold production in Russia. Strata containing gold dust in considerable quantity have recently been discovered in the Ural Mountains. It is said that in the district of Sennigsei a Russian proprietor has found in his gold mine, near Motygya, a nugget 445 pounds in weight, representing a value of nearly \$75,000.



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Best Charcoal, Best Refined and Common

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**CAST IRON.**  
Fronts for Buildings, Columns of every kind,  
Arch Girders, with tension rods—Improved shape,  
Cast Iron Beams, Cast Iron Cornices,  
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Illuminating Pipes, for Steps and Platforms,  
Roof Crestings & Finials, Verandahs, Balconies,  
Shutter Eyes, Turn-Buckles, Window Lintels and Sills,  
Lamp Posts, Tree Boxes,  
Chimney Caps, Copings,  
Leader Pipes, Gutter  
Spouts, Coal Covers, Walking  
Plates, Railings and Gates, for  
dwellings, offices and  
cemeteries. Improved Chairs, for the-  
atre, with turn-up seats,  
Stable Fixtures, Mangers,  
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**MOULDING SAND**  
Fire Sand and Clays.

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Old Rails, Axles, and Wheels bought and sold.  
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STORAGE WHARF & YARD,  
DELAWARE AVENUE ABOVE CALLOWHILL STREET,  
connected by track with railroad  
Cash advances made on Iron.

## New Patents.

We take the following abstract of new  
patents, recently issued, from the official  
record:

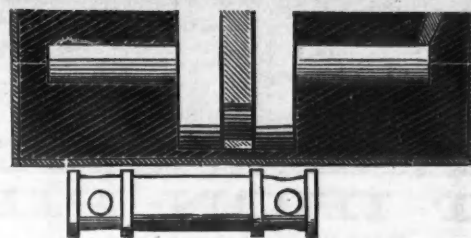
## CASTING CRANKS.

209,836.—To Edward A. L. Roberts, Titus-  
ville, Pa.—Nov. 12, 1878.—1. An improve-  
ment in the process of manufacturing a  
crank axle, consisting in placing a tubular  
perforated re-enforce in a mold properly  
constructed and casting the crank shaft  
within and through it, so as to become in-

commerce and navigation, including tele-  
graphic and postal lines, railways and  
canals, &c.; sixth, population, including  
ethnology, archaeology, density, maps of  
primary, secondary and superior instruction,  
poisons, endemic maladies, &c.

What the Last English Trade Returns  
Show.

The Sheffield Independent, reviewing the  
last Board of Trade report, says:



corporated therewith and form a bearing  
surface thereon.

2. A crank having a hollow crank pin  
cast into the same, into, through and  
around which pin the metal of the cast-  
ing passes.

## PADLOCKS.

210,080.—To William Baldwin Tioga,  
Pa.—Nov. 19, 1878.—1. The tumblers ar-  
ranged to open or slide in opposite directions  
by the pressure of a flat key sliding endwise  
between their oblique opposing edges, in  
combination with the guide m, to support  
the lower edge of the key.

2. The curtain L, to conceal the vital

On the whole, the returns for the month  
of March are more encouraging than those  
for the quarter. The cheapness of our goods  
is beginning to tell, not only upon consump-  
tion, but upon competition. Our foreign  
trade is increasing in bulk, and diminishing  
only in value. Two or three facts bearing  
upon the question of foreign competition de-  
serve notice. We are doing more trade this  
year with the United States in hardware  
and cutlery, in iron, in steel and in machin-  
ery than last year or the year before. In  
the more important of these branches we are  
doing more also with Germany and France.

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Having enjoyed for over TWENTY YEARS the reputation of producing the best quality of

## RAILS,

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Wrought Iron Roof Trusses, Beams, Girders & Joists,

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DECK BEAMS, CHANNEL, ANGLE AND T BARS

curved to template, largely used in the construction of Iron Vessels.

PATENT WROUGHT IRON COLUMNS, WELDLESS EYE BARS,

For Top and Bottom Chords of Bridges.

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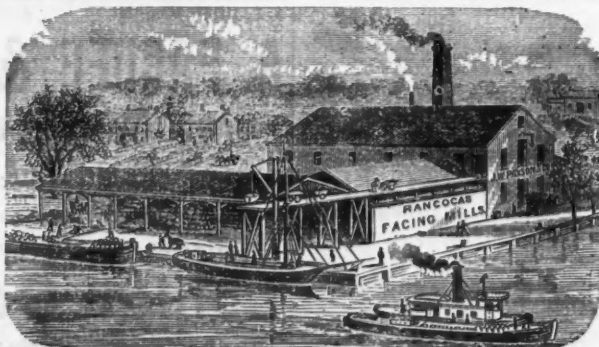
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PLUMBAGO, MINERAL, CRUCIBLES, STOVE PLATE "

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THOMAS H. GARRETT.

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Ores, Slags, Limestones, Coals, Clays, Fire Sands, &c. All analyses made by the members of the firm.  
Price lists on application.

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BESSEMER ORES.

NEW PRICE LIST, March 15, 1879.  
S. W. Hill, Birch Tree, Tunnel and East Cut Ores,  
\$2.75, f. o. b. Hacklebarney (most recent analyses,  
0.44, 0.37, 0.41, 0.357, 0.38, 0.35 phosphorus).  
Upper Tunnel, George and North Veins, \$2.60.  
Red Ore, \$3.00.

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407 Walnut St., Philadelphia.

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General Commission Merchants,

**ORES, METALS, &c.**

Spanish, Algerian and Domestic Ores of  
Iron, Manganese, &c.

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**RAILROAD IRON.**

T Rails,

16, 18, 20, 22, 25, 28, 30, 35, 40, 45, 50, 55, 60 lbs. per  
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**STREET RAILS OF ALL PATTERNS,**  
24, 26, 28, 30, 35, 40, 45, 47, 50, 60 lbs. per yard, in  
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Special sections made if required.  
Book of sections furnished on application.

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**J. W. HOFFMAN & CO.,**

Iron Merchants & Railway Equipments.

205 South Fourth St., Philadelphia.

Sole agents Glasgow Iron Co. and Pine Iron Works  
manufacturers of Muck Bar and all grades of Plate  
Iron. Celebrated "Glasgow" and "Pine" brands for  
fire boxes and difficult flanging. Pig and  
Bar Iron, Rails and all shapes in iron. Quotations  
given on Bridge and Building Specifications.



LOCOMOTIVE AND CAR WHEEL TIRES.

Manufactured from the celebrated OTIS STEEL

BRAND

**STANDARD.**

Quality and efficiency fully guaranteed. Prices as  
low as any of the same quality. We manufacture  
Heavy and Light Forgings, Driving and Car Axles,  
Crane Pins, Piston Rods, &c.

Works at Lewistown, Pa.

Office, 220 S. 4th St., Philadelphia, Pa.

The Iron-Masters'  
LABORATORY.

Exclusively for the

Analysis of Ores of Iron, Pig and Manufactured  
Iron, Steels, Limestone, Clays,  
Slags and Coal for Practical  
Metallurgical Purposes.

No. 339 Walnut St., Philadelphia.

J. BLODGET BRITTON.

This laboratory was established in 1866, at the in-  
stance of a number of practical Iron Masters, ex-  
pressly to afford prompt and reliable information  
upon the chemical composition of the substances  
above mentioned, for smelting and refining pur-  
poses. The object being to make it at once a con-  
venient, practically useful, and comparatively inex-  
pensive adjunct to the Furnace, Forge and Rolling  
Mill.

## CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in  
an ordinary Ore..... \$4.00  
For the per cent. of Pure Iron, Sulphur and  
Phosphorus in do..... 12.50  
For each additional constituent of usual oc-  
currence..... 1.50  
For those of unusual occurrence or difficult  
to determine, the charge must necessarily  
depend upon circumstances.  
For determining the per cent. of Sulphur or  
Phosphorus in Iron or Steel..... 7.00  
For each additional constituent of usual oc-  
currence..... 5.00  
For the per cent. of Carbonate of Lime, and  
insoluble Silicious Matter in a Limestone..... 13.00  
or each additional constituent..... 3.00  
or the per cent. of Water, Volatile Combust-  
ible Matter, fixed Carbon, and Ash in Coal..... 12.50  
For determining the constituents of a Clay, Slag,  
Coke, or of an Ash in Coal the charges will corre-  
spond with those for the constituents of an ore.  
For a written opinion or letter of instruction the  
charge must necessarily depend upon circum-  
stances.  
Printed instructions for obtaining proper average  
samples for analysis furnished upon application.

## Connellsville Coke.

FRANCIS WISTER,

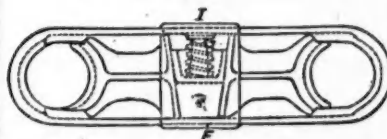
230 South Third Street, Philadelphia.

Best Coke for Furnace and Foundry Use.

parts of the lock, in combination with tum-  
blers I, resting against the back of said  
curtain.

## PITMAN CONNECTIONS.

210,646.—To Alfred Torquist, New York,  
assignor to Rufus Dutton, Yonkers, N. Y.—  
Dec. 10, 1878.—1. A pitman-joint with ball  
and sockets, the sockets of which press  
equally on opposite sides of the ball in the  
direction of the thrust, in combination with



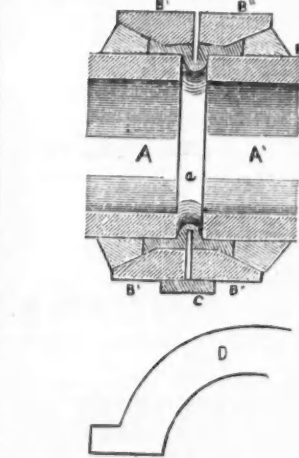
a device for automatically taking up the  
wear on the joints.

2. A single wedge-block and spring acting  
upon the bearings at both ends of the pit-  
man.

3. The loop E, in combination with the  
rivet I, for keeping the parts in place.

## PIPE JOINTS AND COUPLING.

210,906.—To Alphonse Bodart, Huy, Bel-  
gium.—Dec. 17, 1878.—1. The packing-ring  
B, provided with a head, a, and groove b, in  
combination with pipes A A', metal rings  
B' B', and exterior hoop, C, applied to form  
a union between the pipes.



2. The metal semicircles D, applied to the  
joint so as to rest in the groove b, and used  
to retain the groove while the lead packing-  
ring is being compressed and condensed be-  
tween the rings and the pipes.

A French Atlas.—The most perfect map  
of any country, it is claimed, is the Physical  
Atlas of France, executed under the direc-  
tion of MM. Delaunay and Marie Davio.  
The average scale of these maps is two-  
millionths of an inch—thought to be suf-  
ficiently large to allow a representation  
of the different elements included, in as  
well defined and perspicuous a manner as  
possible. The matters in this magnificent  
product of science and art are classified  
under six specialties, as follows: First, the  
political administrative condition of France,  
such as the ancient and modern divisions  
into provinces, departments, judicial dis-  
tricts, university districts, &c.; second, the  
soil and the waters, such as maps of the  
bottom of the sea, of the flora and marine  
fauna of the coast, relief maps of the soil  
and water courses, general and special geo-  
logical maps, &c.; third, the climatology of  
France, showing the lines of temperature,  
rain and wind maps according to the season,  
maps of storms, hail, &c.; fourth, geo-  
graphic botany, as the leafing, flowering  
and fructification of plants, the condition of  
culture, the portions occupied by woods,  
sterile patches, meadows, &c., natural and  
artificial irrigations; fifth, the industry,

Thus our trade with competing markets is  
once more expanding. It is beginning to  
expand, not because of any change in duties,  
but because, now that we are put to it, we  
are producing more cheaply than our fore-  
ign rivals. No sign could well be more  
hopeful, for so long as we can beat foreign  
rivals in their own markets, we shall have  
small difficulty in dealing with their compe-  
tition in neutral markets. With a fair  
day's work for a fair day's wage, a more  
careful adaptation of our goods to the re-  
quirements of the various markets, and a  
free use of machinery, England will give as  
good an account of foreign competition  
during the next five years as she ever did.  
If this result is to be attained, however,  
there must be an end to organized idleness  
and the old obstinacy in regard to new pat-  
terns on the part of workmen, and an end,  
also, of the old sleepiness of manufacturers  
in regard to new patterns and the use of  
machinery. We have keen competitors to  
deal with abroad, and if we are to be busy  
and prosperous again, we must beat them  
in quality and price. It is the only way to  
prosperity, but it will not prove a difficult  
way, if masters and men will unite in put-  
ting forth their best energies.

We imported during the quarter 9582 tons  
of bar iron, 633 tons of steel, and 23,926  
tons of manufactures of iron and steel, of  
the total value of £471,408. Of these im-  
ports we reshipped 6332 tons of bar iron and  
294 tons of steel, of the total value of £56,-  
521. In round numbers, then, our payments  
for foreign iron, steel and manufactures for  
home consumption was a little over £400,-  
000. The quality of the steel, and the ex-  
tent to which it is likely to come into com-  
petition with our own, may be judged from  
the fact that it was only £9. 16/6 per ton.  
The average price of iron was £9. 14/6 per  
ton—a price which shows that the great  
bulk of it consisted of the higher qualities of  
Swedish and other brands which we have  
required for manufactures, and not iron  
competing with our own in the markets.  
These two items may therefore be dismissed  
from consideration in the question of fore-  
ign competition. The only item represent-  
ing foreign competition in the English mar-  
ket is the item of £378,643, which we pay  
for manufactures of iron and steel imported  
from abroad. We commend this item to the  
attention of the advocates of reciprocity in  
Sheffield and other hardware districts. It  
is the only item by the levying of duties on  
which hardware manufacturers could hope  
to benefit. Take now the other side of the  
account. We exported last quarter:

Hardware and cutlery.....	£727,921
Iron and steel, manufactured and un- manufactured.....	3,774,304
Steam engines.....	479,520
Other machinery.....	973,313
Telegraph wire, &c.....	100,604

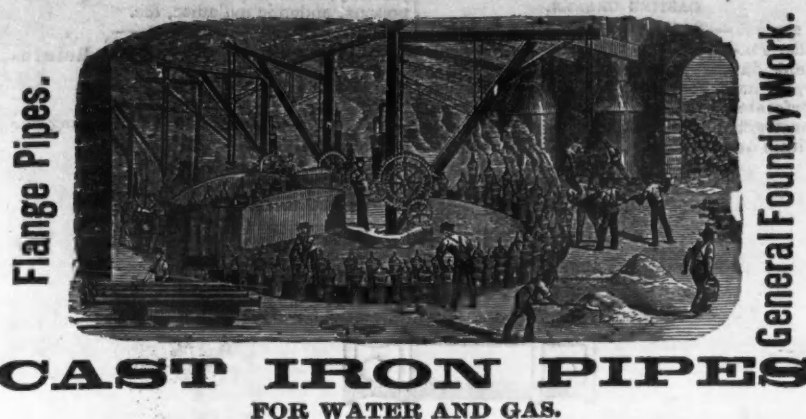
Total..... 6,055,642

The theory is that we, who in these bad  
times export iron, steel, machinery, and  
hardware to the value of over \$24,000,000  
annually, would be largely benefited by duties  
being put on the foreign hardware goods we  
import. The fact, however, is that the hard-  
ware we import does not amount to more  
than 5 per cent. of that we export, and is  
hardly more than 2½ per cent. of our total  
production. If, therefore, imports of foreign  
hardware were absolutely prohibited, and  
English manufacturers made all that is now  
imported, the increase could not exceed 2½  
per cent., while we should stand to lose at  
least ten times that amount of foreign trade  
by the retaliatory duties which would cer-  
tainly be levied on our goods by competitors  
abroad. If we imported more manufactured  
goods than we export, there might be some  
ground for considering the question of  
tariffs; but for a country which imports  
little, except food for its people and raw  
material for its manufactures, to clamor for  
protection under the guise of reciprocity,  
or in any other shape, is to show profound  
ignorance of the bearing of a protective  
policy.



## McNEALS & ARCHER,

BURLINGTON, N. J.



**CAST IRON PIPES**  
FOR WATER AND GAS.

ESTABLISHED IN 1848.

## SINGER, NIMICK & CO.,

PITTSBURGH, PA.

MANUFACTURERS OF ALL KINDS OF

HAMMERED AND ROLLED

## STEEL,

Warranted Equal to any Produced.

### BEST REFINED TOOL CAST STEEL

For Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-Knives, Cold-Chisels and Machinists' Tools generally.

### SAW PLATES

For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

### Sheet Steel

For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws, Stamping Cold, &c., &c.

### SIEMENS-MARTIN (Open-Hearth) PLATE STEEL

For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.

All our Plate and Sheet Steel being rolled by a Patented Improvement is unequalled for surface finish and exactness of gauge.

### ROUND MACHINERY CAST STEEL

For Shafting, Splines, Rollers, &c., &c.

File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c., Cast and German Spring and Plow Steel.

"Iron Center" Cast Plow Steel. Finished Rolling Plow Coulters with Patent Screw Hubs attached.  
"Soft Steel Center" Cast Plow Steel. Agricultural Steel cut to any pattern desired.  
"Solid Soft Center" Cast Plow Steel. Steel Forgings made to order.

Represented at 59 BEEKMAN ST., NEW YORK, by  
**HOGAN & BURROWS, Gen'l Agents for Eastern and New England States.**

## MIDVALE STEEL WORKS,

CRUCIBLE AND OPEN HEARTH STEEL.

## TIRES AND AXLES

OF EVERY DESCRIPTION.



TOOL, MACHINERY AND SPRING STEEL  
CASTINGS AND FORGINGS.

WORKS AND OFFICE:  
Nictown, Philadelphia, Pa.

WAREHOUSE:  
12 N. 5th St., Philadelphia, Pa.

ESTABLISHED 1847.

## A. WHITNEY & SONS,

PHILADELPHIA.

## CHILLED RAILROAD WHEELS

For every kind of service, including Street, Mine and Lumber Tramways. Wheels furnished in rough bored or on axles. Chilled castings made to order.

## PENNSYLVANIA STEEL COMPANY,

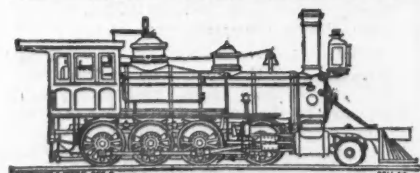
STEEL RAILS, AXLES & FORGINGS

For Frogs, Piston Rods, Guide Bars, Wrist Pins and Machinery Purposes.

Works at Baldwin Station, Pennsylvania Railroad, near Harrisburg, Pa.

Address all orders to

PENNSYLVANIA STEEL COMPANY, 208 South Fourth Street, Philadelphia



## BALDWIN LOCOMOTIVE WORKS,

BURNHAM, HARRY, WILLIAMS & CO., Proprietors,  
Philadelphia, Pa., U. S. A.,  
Manufacturers of

## LOCOMOTIVE ENGINES

of every Description.

Catalogues, photographs and estimates furnished on application of customers.

## NOISELESS STEAM MOTORS;

For city and suburban Railways.

These machines are nearly noiseless in operation; show no smoke with the use of anthracite coal or coke as fuel, and show no steam whatever under ordinary conditions of service. They can be run at two or three times the speed of horse cars and draw additional cars. Circulars with full particulars supplied.

## CHROME STEEL

WAREHOUSE.

Address JOHN W. QUINCY, Manager, 98 William St., N. Y.

This Steel is made from Chromium and Iron, and is remarkable for Strength, Durability and Uniformity. Send for Circular, where the proof will show it does 25 to 75 per cent. more than other cast steel. It is adapted to all kinds of work where cast steel is used. Chrome Steel Castings from 25 to 500 lbs. to order.

## Southern Advertisements.

## Vulcan Iron & Nail Works,

Chattanooga, Tenn.,

MANUFACTURERS OF

BAR IRON, NAILS, RAILROAD SPIKES, FISH BARS AND BOLTS BRIDGE AND CAR BOLTS, AND FORGINGS GENERALLY.

## ROANE IRON COMPANY,

Manufacturers of and Dealers in

## Pig and Railroad Iron.

CHATTANOOGA, - - - - - TENN.

## WASON CAR & FOUNDRY COMPANY,

Chattanooga, Tenn.,

Manufacturers of

RAILWAY FREIGHT CARS, Car Wheels and Castings.

## TENN. COAL & RAILROAD COMPANY,

A. M. SHOOK, General Manager, - - Tracy City, Tenn.

Proprietors of the Sewanee mines, capacity of 20,000 bushels of coal and coke per day. Several important institutions of learning, including the University of the South, also the celebrated Beersheba Springs, are located upon the line of this Railroad. Being also the proprietors of several extensive tracts of very fine lands, offer special inducements to colonists. Communications addressed to the General Manager will receive prompt attention.

## T. J. BROWN,

Rockwood, Tenn.

Miner and Contractor of  
Fossiliferous Ores.

A superior article delivered at low figures at any furnace within the district or at any point on the Ohio River. Refer to Roane Iron Co., Chattanooga Iron Co., or S. B. Lowe, Chattanooga.

## S. B. LOWE,

Pig Iron, Storage &  
Commission.

Dealer in Charcoal and Coke Pig Iron for Foundry, Forge or Car Wheel purposes.  
Chattanooga, Tenn.

## LIGHT GRAY IRON CASTINGS

MADE A SPECIALTY BY  
**TAYLOR & BOGGIS,**

65 to 73 Central Way,  
CLEVELAND, OHIO.

Having extensive machine shop connected with foundry, we are enabled to fit up all kinds of light hardware or patented articles. Correspondence solicited.

## IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

Gun, Pistol, Wrench Bars, &c. Also, Die Sinking. Manufacturers also of Bricklayers', Moulders' and Plasterers' Tools, Saddlers' Round and Head Knives.

## WILLIAM ROSE & BROS.,

36th & Filbert Sts., West Philadelphia.

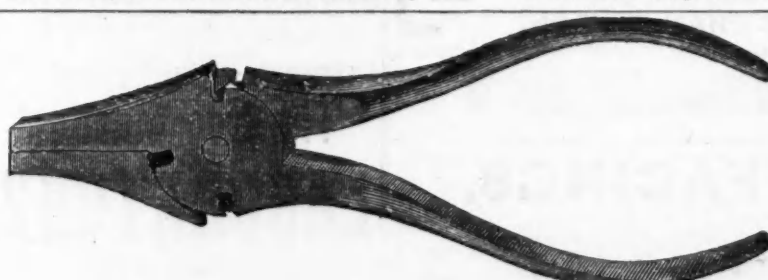
## RICHARD P. PIM,

MANUFACTURER OF

## MALLEABLE AND GRAY IRON CASTINGS

For Car, Carriage and Tinsmiths' Hardware.

Corner Taylor and Buttonwood Streets, - WILMINGTON, DEL.



## J. M. KING & CO.,

WATERFORD, N. Y.,

Manufacturers of the BUTTONS PATENT

## "WIRE CUTTER AND PLIER COMBINED."

Specially Adapted for Use on Wire Fence.

Also Manufacturers of

Blacksmith and Machinists' Stocks and Dies, Plug and Taper Taps, Hand, Nut and Screw Taps, Pipe Taps and Reamers.

Price List on application.

Established by DANIEL B. KING, 1829.

## FENCE WIRE.

Nos. 6, 7, 8, 9 and 10, for using plain.

Nos. 12, 12½ and 13, for making into Barb Wire.

No. 20, for Harvester Wire.

Send for prices and samples.

## Lewis, Oliver & Phillips,

91 & 93 Water Street,  
PITTSBURGH, PA.



## STANDARD GIRARD WRENCH

WARRANTED.



FOR  
STRENGTH  
AND  
Durability  
IT HAS  
NO SUPERIOR,  
GUARANTEED  
IN  
EVERY RESPECT.

Wrought Bar, Head  
and Screw.

Owing to the increased demand for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR  
TERMS AND PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.  
A. Garrison. J. H. Ricketson. Wm. Holmes  
PITTSBURGH FOUNDRY.

## A. GARRISON & CO.,

Manufacturers of

Chilled Sand and Patent  
Homogeneous Steel

## ROLLS,

Both Solid and Hollow,

Ore and Clay Pulverizers, Rotary Squeezer Haskin's Patent Double Spiral Finings, and Rolling Mill Castings of every description.

OFFICE, 6 Wood St., - - PITTSBURGH.

## Bridgewater Iron Co.,

Bridgewater, Mass.,

Manufacturers of

SEAMLESS DRAWN

COPPER AND BRASS TUBES,

TACK PLATES,

Forgings of every description.

Bridgewater Iron Co.'s

HORSE NAILS.

PRICE LIST.

Nos. 5 6 7 8 9 10

Per lb. .26¢ .27¢ .28¢ .29¢ .30¢ .31¢

Liberal discounts to the Trade.

73 Pearl Street, New York.

28 Broad Street, Boston.

## Coal.

A. PARDEE, Hazleton, Pa. J. G. FELL, Phila.

## A. PARDEE & CO.

303 Walnut St.,

PHILADELPHIA,

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

## Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves and firms connected with us, viz.

A. Pardee & Co. {HAZLETON, CRANBERRY, SUGAR LOAF.

Pardee, Bro. & Co. LATTIMER.

Calvin Pardee & Co. HOLLYWOOD.

Pardee, Sons & Co. Mt. PLEASANT.

THE HOBOKEN COAL CO.,

Dealers in

SCRANTON, LEHIGH and other COALS.

Retail Yard on D. L. & W. Railroad, cor. Grove and 10th sts., Jersey City. Coal delivered direct from shutes to carts and wagons. Families and manufacturers supplied with the best qualities of Coal at the lowest rates. Offices: At yard cor. Grove and 10th sts.; cor. Bay st. and Newark av., Jersey City; Room 25, 111 Broadway, N. Y. General Office, Bank Building, cor. Newark and Hudson sts., Hoboken. P. O. Box 247, Hoboken.

## MINERS' CANDLES.

superior to any other Light for Mining

Purposes. Manufactured by

JAMES BOYD'S SON,

Nos. 10 & 12 Franklin St., New York.

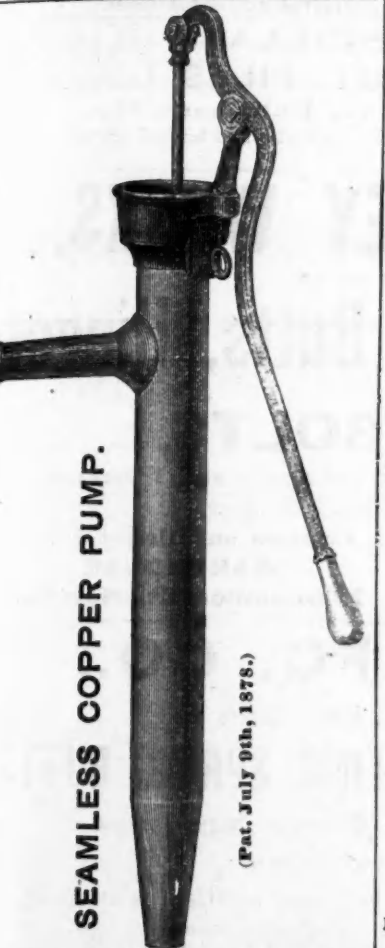


The Largest Pump Works in the World.  
Over 800 Different Styles.  
PUMPS, STEAM PUMPS, ROTARY  
PUMPS, CENTRIFUGAL PUMPS,  
PISTON PUMPS,  
for Farmers, Paper Mills, Fire Purposes, suitable for  
all situations imaginable.

Fig. 267.



Also, HAND FIRE ENGINES.  
Send for Catalogue. Address,  
**RUMSEY & CO.,**  
Seneca Falls, N. Y., U. S. A.  
BRANCH HOUSES:  
93 Liberty St., N. Y., and 195 Lake St., Chicago, Ill.  
L. M. RUMSEY & CO., Agents,  
511 North Main St., St. Louis, Mo.  
MARCUS C. HAWLEY & CO., San Francisco and  
Sacramento, Cal., General Agents for the Pacific Coast.  
JUSTUS SCHMIDT, Agent, Hamburg.



SEAMLESS COPPER PUMP.

(Pat. July 9th, 1878.)

In addition to the great variety of Iron and Brass  
Pumps which we have been manufacturing for  
years, we are now making a full line of COPPER  
PUMPS under a patent granted July 9, 1878. The  
Barrel and Cone are drawn in one SEAMLESS piece.  
No brazing or soldering is required. Being made of  
as heavy stock, they are stronger and more durable,  
give a perfect valve seat, and require less repairs than  
those made in the old manner. The Barrels are tested  
with a five hundred pound inside pressure to the  
square inch. The Spout also is seamless. Dealers  
and Plumbers pronounce them far superior to any  
before in the market. The inside of the Pump and  
the working parts are thoroughly tinned, giving a  
healthy surface for the contact with water. The  
handle is convenient and nickel-plated. The Pumps  
are highly finished, neatly painted and decorated  
with gold bronze, the whole being a highly service-  
able and ornamental article for a Kitchen of the most  
costly residence. Discount to the trade, 25 per cent.  
No charge for boxing. Freight paid to Boston or New  
York. Orders for all varieties of Pumps filled  
promptly. Please send for price list.

UNION MFG. CO., New Britain, Ct.  
Warehouse, 95 Chambers St., New York.

For sale in Boston by Walworth Mfg. Co.,  
Hambden & Matthews, Braman, Dow & Co., Eaton  
& Dana, Macomber, Bigelow & Dowse, M. C.  
Warren & Co., and Bognan & Vinal; in Provi-  
dence by Belcher Bros., and in Worcester by  
C. Foster & Co. and White & Conant.

ALWAYS ASK FOR

ESTERBROOK'S

Steel Pens.

THE MOST POPULAR PENS IN USE.

For Sale by all Stationers.

ESTERBROOK STEEL PEN CO.,

Works, Camden, N. J. New York.

PHOSPHOR-BRONZE.

Bearings,  
Pump Rods  
and  
Spring Wire.Phosphor-Bronze.  
Apply to  
The Phosphor-Bronze Smelting Co., Limited,  
203 Washington Avenue, Philadelphia.

**W. & B. DOUGLAS,**  
Middletown, Conn.,

The Oldest and Most Extensive Manufacturers of

**PUMPS,  
HYDRAULIC RAMS,**

**GARDEN ENGINES,  
Yard Hydrants, Street Washers,  
WIND-MILL PUMPS**

AND OTHER

**Hydraulic Machines  
IN THE WORLD.**

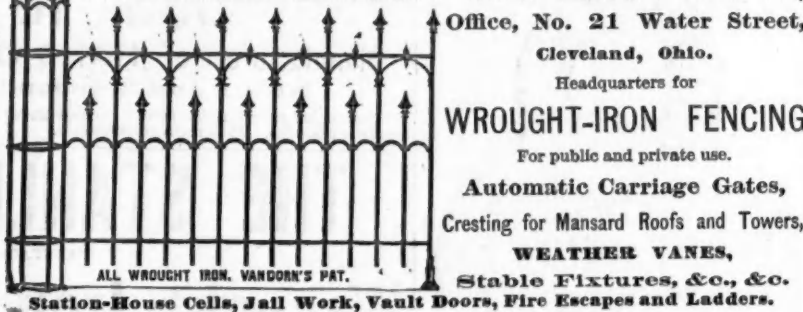
Awarded the **GRAND MEDAL** at  
**WORLD'S EXPOSITION**, Paris,  
France, 1878, being the highest award on  
Pumps, &c.; also the highest medals at  
Paris, 1867, Vienna, 1873, and Philadelphia,  
1876, accompanied by the Report of Judges.

Descriptive Catalogues and Price Lists  
sent when requested.

**BRANCH WAREHOUSES,  
85 and 87 John St., N. Y.,  
AND  
197 Lake St., CHICAGO, Ill.**

Extra Strong  
Windmill Pump.  
Figure 271.

**CLEVELAND WROUGHT-IRON FENCE WORKS,**



Office, No. 21 Water Street,  
Cleveland, Ohio.

Headquarters for

**WROUGHT-IRON FENCING**

For public and private use.

Automatic Carriage Gates,

Cresting for Mansard Roofs and Towers,

**WEATHER VANES,**

Stable Fixtures, &amp;c., &amp;c.

Station-House Cells, Jail Work, Vault Doors, Fire Escapes and Ladders.

**ALL WROUGHT IRON, WARDON'S PAT.**

**THE TURNER & SEYMOUR MFG. CO.,**

MANUFACTURERS OF

**Upholsterers', Stationers', House Furnishing and Fancy Hardware**

**AND NOTIONS.**

Fancy Brass Goods and Iron Castings to Order



Picture Nails, Knobs and Hooks, in great Variety. Gilt and Tinned Picture  
Wire, Twisted and Braided.

**American Cast Shears,**

Sold by Hardware and Notion Dealers everywhere.

Also Manufacturers of Shade Fixtures and Trimmings, Ink Stands, Twine Boxes, the Celebrated  
"Family" Egg Beater, Nutmeg Graters, Escutcheon Pins, Curtain Rings, &c., &c.

**FACTORIES, Wolcottville, Conn.**



Full Size of Second Class Brass.

**THE AVALANCHE**

Rotary, Flour and Meal



**SIFTER**

Scoop, Measure, Mixer, Weigher, Egg  
Beater, Rice Washer, Tomato, Starch,  
Wine and Fruit Strainer.

Guaranteed the very best, and the cheapest  
to the jobbing trade. It commands itself where-  
ever shown. **WRITE FOR PRICES.**  
**N. DUBUL & CO., 441 & 443 Plum St.**  
Lantern and Sieve Manuf'rs. CINCINNATI, O.

**GILBERT & BENNETT MFG. CO.,**  
GEORGETOWN, CONN.,  
MANUFACTURERS OF  
**IRON WIRE, SIEVES AND  
WIRE CLOTH.**

Power Loom Painted Screen Wire Cloth,  
GILBERT'S RIVAL ASH SIEVE,  
Galvanized Twist Wire Netting,  
THE UNION METALLIC CLOTHES LINE WIRE,  
Warehouse, - 273 Pearl St., New York.

**CLOTHES WRINGERS.**



**T. J. ALEXANDER, Manager,**  
BOSTON, MASS.

**Clayton Steam Pump Works.**  
**AIR COMPRESSORS,  
STEAM PUMPS,**  
for Water, Air & Vacuum.  
Prices greatly reduced.  
Send for circulars.  
**JAS. CLAYTON,**  
11 & 16 Water St.  
Brooklyn, N. Y.

## Steel Rails for Italy.

Mr. J. Schuyler Crosby, United States  
Consul at Florence, Italy, sends, under date  
of Jan. 22, 1879, the following communica-  
tion to the Department of State:

Referring to a dispatch to the department,  
under date of Oct. 27, 1878, on the subject  
of the "Demand and Supply of Steel Rails  
in Italy," I beg leave to give some addi-  
tional details on the same subject, which may  
be of value to those interested in the man-  
ufacture and sale of steel rails in the United  
States, and at the same time demonstrating  
that it may be possible for even American  
manufacturers of steel rails to compete with  
the English producers in Sheffield in supply-  
ing foreign countries, provided they can  
have equal advantages in rates of freight  
with the German and Belgian firms.

The German and Belgian railway material  
manufacturers still keep a strong hold  
on the trade in Italy. Prices have ranged  
exceedingly low during the year, and steel  
rails have been sold at a little above £6 per  
ton, free on board at Italian ports. This is  
a remarkable contrast with the rate of some  
£20 per ton of four years ago.

The South Italian Railway Company has  
put down a considerable quantity of steel  
rails 12 meters long (about 40 feet), and the  
results of a sufficiently extended experience  
have been favorable. Probably this length  
will be fixed as the normal one, as it gives a  
more solid track, and saves, of course, a  
large proportion of fish plates and bolts.  
The system of fishing generally adopted is  
by stout angle fish plates of steel supporting  
suspended joints. I think there is a solid  
and smooth track on the most important  
parts of the Italian railways now, owing to  
the great improvements adopted during the  
last few years in the way of steel rails and  
angle-steel fish plates.

One of the principal reasons, I believe, of  
the continued success of German and Bel-  
gian firms in securing contracts in railway  
material, is that they have foreseen, more  
clearly than most of the English manufac-  
turers, that the general demand for such  
material in Europe would remain far below  
the means of the total productive power of  
the several manufacturing countries. I  
have certainly found that the rapid decline  
in prices has been led by the Germans and  
Belgians, and now they can export from  
Antwerp and Rotterdam at rates as low,  
and sometimes lower, than the English get  
from their most busy ports. For instance,  
I may mention that a short time ago a par-  
cel of 10,000 steel rails was shipped from  
Antwerp to Italy at the exceptionally low  
freight of 10/ per ton. It has been sup-  
posed—and, in fact, freely stated by the  
Germans themselves—that they have taken  
many contracts at a loss; but, however this  
may be, English railway material makers  
must realize the disagreeable fact that they  
have, from henceforth, whether the trade is  
good or bad, to compete with foreign rivals  
content with small profits, holding freer  
hands over their workmen, and who have at  
the head of each department engineers edu-  
cated in technical colleges, and are backed  
by sufficient capital.

One of the largest steel rail manufacturers  
of Sheffield, England, in reply to some in-  
quiries made by me on this subject, attempts  
to explain that one of the main causes of  
their not being able to compete successfully  
with German and Belgian firms engaged in  
the same trade, is the high rates of freights  
from Sheffield to the shipping ports, and  
says: "Regarding Sheffield, I may re-  
peat what I wrote you before, viz.,  
that as long as the rate of carriage  
to and from Hull or Goole on heavy goods  
remains as high as it is, we shall stand at  
an enormous disadvantage in our competi-  
tion with other places. I would humbly  
suggest the Board of Trade should appoint  
an engineer to work in conjunction with  
the Sheffield Chamber of Commerce, for the  
purpose of ascertaining in what manner  
this very important manufacturing center  
could be placed in connection with the sea  
at the lowest rates, such rates I mean as  
our German and Belgian rivals enjoy for  
much greater distances than 33½ miles to  
Goole or 70 odd to Hull. Perhaps if the  
actual water-way between Sheffield and the  
sea were worked on the principles advo-  
cated lately by Mr. Theophile Tinet in his  
book on the 'Exploitation des Canaux et  
Voies Navigables' (Brussels), a great econ-  
omy would be effected. Mr. Tinet states  
that all important canals should be managed  
on the same principle as a railway company;  
that is, to be owned and worked by the same  
persons, having 'trains' of boats with  
small steamers loading them by a cable at-  
tached to the bottom of the canal, as is done  
with many canals on the Continent, where  
every means are used to effect economy,  
both by carrying goods down to the port  
and taking ore to the works. If some such  
plan were carried out, I believe that Shef-  
field would soon enjoy a rate of 3/ to 3/6  
instead of at present more than double that  
freight. Something should be done at once,  
while we have still got hold of the trade,  
and not when we have been pushed out  
of it." By the foregoing it will be seen that  
the English manufacturers are seriously al-  
armed at the enterprise shown of late by  
their Continental neighbors.

The last locomotives let in Italy were con-  
tracted for by a Bavarian firm at 1.20  
francs per kilo., equal to £48 per ton, which  
is of course a very low price.

Some interesting figures in regard to the  
life of rolling stock and superstructures  
have been compiled by the Illinois railroad  
commissioners, from the returns of 26 roads  
reporting on the subject. They show the  
following general average of duration:  
Locomotives, 15½ years; passenger cars,  
15½ years; stock cars, 10 years; freight  
cars, 11½ years; iron rails, 7 years; steel  
rails, 14 years; oak ties, 7 years; pine ties,  
4½ years; cedar ties, 5½ years; truss  
bridges, 9½ years; trestle bridges, 8 years;  
pile bridges, 9 years; joints and fastenings,  
7 years; and fencing, 8½ years. The To-  
ledo, Peoria & Warsaw road gives the life of  
locomotives at 8 years, and of passenger  
cars at 15, while the Michigan Central gives  
locomotives 24 and passenger cars 20 years

of life. Only one other road puts the life  
of passenger cars at 20 years. The lowest  
reported life rate of passenger cars is 8  
years. The shortest life of iron rails is 3  
years; the longest 12. Four roads give 10  
years. Only four roads report the life of  
steel rails, and they give it as 9, 12, 13 and  
20 years respectively. The reported life of  
truss bridges ranges from 5 to 20 years, of  
trestle from 5½ to 10, of pile from 6 to 12,  
of fencing from 5 to 10.

## Philadelphia Permanent Exhibition.

The managers of the Permanent Exhi-  
bition on the Centennial grounds, have decided  
on making it a bazaar for the exhibition and  
sale of goods, and a resort for refined amuse-  
ment; to classify, arrange and augment the  
valuable collection of material on hand, and  
enhance the opportunity for easy inspection  
by visitors. The Council of Education have  
organized the Exhibition into ten depart-  
ments, each one of which is in charge of a  
chief thoroughly fitted for the position. The  
department of inorganic material will be il-  
lustrated by the necessary charts and maps,  
and so arranged as to be easily understood  
by the general public. The geological sec-  
tion will embrace minerals and a full exhi-  
bit of articles pertaining to the art of min-  
ing engineering, accompanied by a large  
geological map of the country. In the chemi-  
cal section will be shown the products of the  
laboratory, so far as they are objects of mer-  
chandise, and full opportunity will be given  
to form an idea, by comparison of the speci-  
mens, of the progress of the art. The min-  
ing and engineering section will include min-  
ing tools, charts, models of mines, and of im-  
plements in the various departments con-  
nected with underground work, and the latest  
methods of instruction in mining engineering  
as practiced in the best schools. A library  
will also be added, wherein may be obtained  
information in the branches embraced in the  
inorganic department. During the year lec-  
tures will be given, when the resources of  
the department are to be utilized for the  
purpose of illustration. The managers be-  
lieve that in time they can erect a work-  
room for students prosecuting studies in any  
of the branches germane to the department,  
and aid them by the superintendence of com-  
petent professors. The department of or-  
ganic materials will represent the materials  
of the sciences of botany, zoology, anatomy,  
physiology and paleontology. The paleontol-  
ogical collections include seven or eight  
hundred species of vertebrate and many in-  
vertebrate, numbering thousands of speci-  
mens. In addition to these are important  
European and West Indian collections.

The departments of archaeology and  
ethnology, and that of national architecture,  
furniture, costumes and traits, will be com-  
plete in every way. The department of  
model homes has been created for the  
double purpose of showing the features,  
materials and appliances of the best modern  
homes, arranged in the manner in which  
they are used, thus affording an opportunity  
of securing important information to those  
interested. One section, fitted up as a  
library, will contain the best technical and  
popular publications on domestic architec-  
ture, garnitures and landscape gardening.  
The other departments, including those of  
agriculture, machinery, apparatus and man-  
ufactures, industrial training, schools, school  
systems and publications, and fine arts, will  
be complete, thoroughly arranged, and con-  
ducted in the best manner by competent  
heads.

## Synopsis of the New Postal Law.

The following synopsis of new legislation  
contained in the new post office appropria-  
tion bill just passed, and which went into  
effect May 1, has been prepared at the de-  
partment for the information of the public:  
Mail matter is divided into four classes.  
First, written matter; second, periodical  
publications; third, miscellaneous printed  
matter; fourth, all matter not embraced in  
the other three classes which is not in its  
form or nature liable to destroy, deface or  
otherwise damage the contents of mail bags,  
or harm the person of anyone engaged in the  
postal service, and is not above the weight  
provided by law, which is declared not to  
be exceeding four pounds for each package  
thereof, except in case of single books  
weighing in excess of that amount, Con-  
gressional documents and matter emanating  
from any of the departments in the  
government, or from the Smithsonian In-  
stitute. What is known as the Com-  
stock law in regard to obscene pub-  
lications is re-enacted, and such matter,  
as well as matter relating to lotteries, gift  
concerts, and fraudulent schemes and de-  
vices, are declared unmailable. Printed  
matter is defined to be reproduction upon  
paper by any process, except that of hand-  
writing, of any forms of letters, characters,  
figures or images, or of any combination  
thereof, not having the character of actual  
and personal correspondence.

Mail matter of second class embraces all  
newspapers and other periodical publi-  
cations which are issued at stated intervals,  
and as frequently as four times a year.

Publications of the second class, when  
sent by the publisher thereof and from the  
office of publication, including sample copies,  
or when sent from a news agency to actual  
subscribers thereto, or to other news agents,  
shall be entitled to transportation through  
the mail at the uniform rate of two cents a  
pound or fraction thereof, such postage to be  
prepaid, as now provided by law. The free  
delivery of one copy to each actual subscriber  
residing in the county where the same are  
published, formerly merely confined to  
weekly papers, is extended to dailies and  
other matter of the second class, except at  
offices of free delivery; when deposited for  
delivery by carriers at such offices, weeklies  
are delivered free, but dailies and other pub-  
lications of the second class, when delivered  
by carriers at the post offices where pub-  
lished, pay the same rates as before.

Where a letter is deposited in the post  
office without being properly stamped, the  
department forwards the package to its  
destination and collects the postage from  
the receiver.





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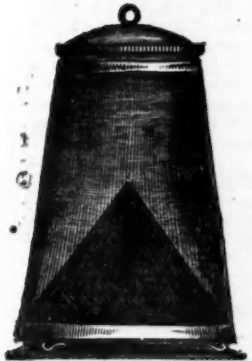
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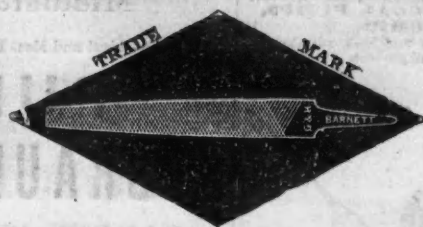
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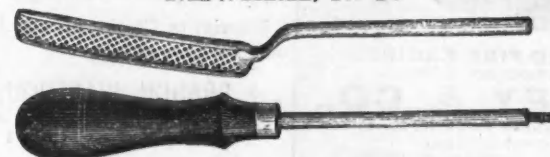
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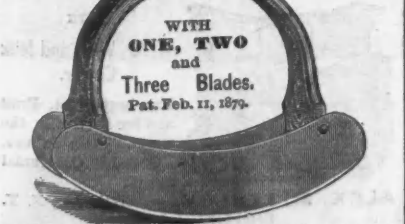
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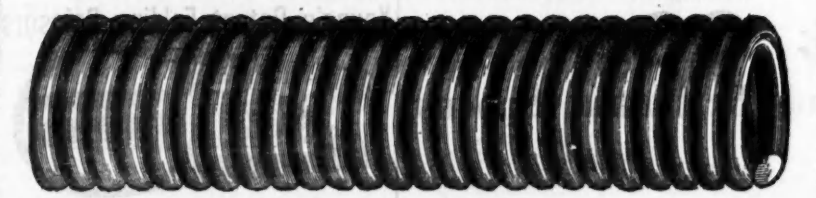
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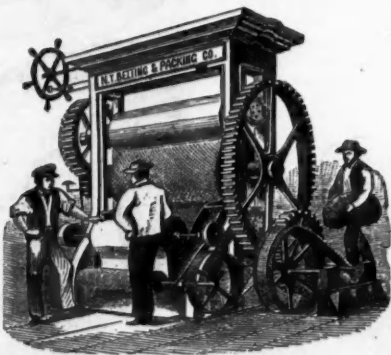
The Ansonia Brass Spring Wire is made to combine the qualities of uniformity of temper, great power of resistance and recovery, toughness and accuracy of gauge. Each bundle of wire, before it leaves the works, is subjected to test in a machine which records the deflection and molecular displacement under transverse stress and torsion, and is especially adapted to making spiral springs for mowing and reaping machines, harvesters and for all purposes for which the highest grade of spring wire is required.

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## PARIS EXPOSITION.

## THE EXHIBIT OF IRON AND STEEL.

An Abstract of the Report by the Hon.  
Daniel J. Morrell, Commissioner to the  
Paris Exposition from the United States.

The complete report to the Secretary of State on the iron and steel exhibits at the Paris Exposition, by the Hon. Daniel J. Morrell, United States Commissioner, has just been made public. It is very elaborate and exhaustive, making 108 octavo pages. Mr. Morrell not only describes the siderurgical features of the exposition, but he also inquires into the coal and iron resources of the various countries throughout the world, whether they were represented at Paris or not. This feature of his report is very interesting, giving in a nutshell the condition of the iron trade of the globe and its dependent or accompanying industries. The relative position of the chief manufacturing countries is carefully noted, and the capabilities of countries not yet classed among manufacturing nations are plainly described. The causes of the world-wide depression in business, the present condition of European labor, and the ability of America to enter foreign iron and steel markets, are all discussed with a free hand. The report is a valuable addition to metallurgical literature and will be widely sought for. We would like to reprint the whole of it in our columns, but unfortunately have no room for more than an abstract of it, embodying the most salient points. While the statistics given by Mr. Morrell are very interesting, we have for various reasons been obliged to use them but sparingly, though they show very great industry and discrimination on the part of Mr. James M. Swank, Secretary of the American Iron and Steel Association, to whom Mr. Morrell publicly states he is indebted for them, as well as for the historical information contained in his report.

## THE REPORT.

The joint resolution of Congress, approved December 15, 1877, in relation to the Universal Exposition of 1878, at Paris, provided for the appointment by the President of twenty commissioners additional to the Commissioner-General, and on the 12th day of February, 1878, I had the honor to be appointed one of these commissioners. By arrangement with the Commissioner-General, I undertook the consideration of the commercial and business aspects of the iron and steel industries as they were represented at the Exposition, and such observations as I may submit will be strictly in accordance with this understanding, leaving to others the presentation of facts and opinions affecting the purely technical and scientific aspects of these industries.

The Exposition was as completely successful as all France desired that it should be, and France is richer to-day, her people are more generally employed and her future is brighter than if it had not been held. The part taken by France in supplying contributions was most creditable to her resources and to the skill of her industrial classes. With one exception, the part taken by every other progressive industrial nation which participated in the Exposition was also, in the main, adequate and satisfying. The United States formed the exception. Neither her natural resources nor the mechanical skill and achievements of her people were adequately represented. Our display, although with few exceptions excellent in quality, was not sufficient in extent, and not, therefore, fully representative of our varied resources.

Approaching the subject of the iron and steel exhibits at Paris, it is proper at the beginning to say that so complicated and expensive are the modern processes for converting iron ore into partially or wholly finished products, that they are practically excluded from all international exhibitions; while, even if exhibited, they could not, for obvious reasons, be shown in operation. Of machinery used in other manufacturing industries, and made mainly or wholly of iron and steel, the display was, in an economic sense, the most imposing feature of the Exposition.

It may be remarked that on the Continent of Europe, and to a certain extent in Great Britain, the manufacture of heavy machinery, railway rolling stock, steam engines, military material, &c., is more generally conducted in connection with the manufacture of iron and steel than in this country. Locomotives, railway cars and ordnance, for instance, are not manufactured by a single establishment in the United States which makes iron and steel, but in Europe the combination of industries indicated is frequently met.

## COUNTRIES WHICH PRODUCE THE MOST IRON AND STEEL.

The leading iron and steel producing countries of the world are as follows, in the order of their prominence: 1. Great Britain. 2. United States. 3. Germany. 4. France. 5. Belgium. 6. Austria and Hungary. 7. Russia. 8. Sweden. These countries produce more than 98½ per cent. of the world's annual increase of iron and steel. All were represented at the Exposition except Germany. All other countries unitedly produce less than 1½ per cent. of the annual increase. The following table of the total annual production of pig iron and castings from furnaces, and of steel, is compiled from the latest statistical data accessible. The tons used are English tons of 2240 pounds:

Country.	Year.	Cast and Pig Iron.	
		Production, Tons of 2240 lbs.	Per cent. of Total.
Great Britain.....	1878	6,300,000	45.63
United States.....	1878	2,301,215	16.67
Germany, including Grand Duchy of Luxembourg.....	1876	1,816,672	13.16
France.....	1878	1,417,073	10.36
Belgium.....	1876	850,000	6.07
Austria & Hungary.....	1876	443,689	3.21
Russia.....	1875	420,035	3.04
Sweden.....	1876	346,955	2.51
Other countries.....	1877	200,000	1.45
Total.....		13,807,725	100.00

Country.	Year.	Steel.	
		Production, Tons of 2240 lbs.	Per cent. of Total.
Great Britain.....	1878	1,100,000	39.70
United States.....	1878	735,000	25.33
Germany, including Grand Duchy of Luxembourg.....	1876	284,159	13.87
France.....	1878	261,801	10.17
Belgium.....	1877	100,000	3.61
Austria & Hungary.....	1876	113,158	4.08
Russia.....	1875	12,720	.46
Sweden.....	1876	23,652	.86
Other countries.....	1877	20,000	.73
Total.....		2,770,524	100.00

## FRANCE.

By far the finest exhibit of iron and steel and their products ever made by France was made at her own exposition in 1878. Her exhibit of iron and steel proper was also greatly superior in size and variety to that made at the same or any other country. Of the various exhibits made by the iron and steel makers of France, that of Schneider & Co., of Creusot, was the most conspicuous, and the most complete, being the finest single exhibit of iron and steel ever made at an international exhibition.

The works of Schneider & Co. are mainly situated at Creusot, in the department of the Saône and Loire, where a Bessemer plant of six 8-ton converters, a Siemens-Martin plant (both commenced in 1869), blast furnaces, plate mills, gun factory, mines, &c., are located; but their locomotive, boiler, bridge-building, ship-building and marine works are situated at the neighboring town of Chalon, on the river Saône. There are also coal and ore mines, brick works, &c., elsewhere. In the last fiscal year there were produced 549,000 metric tons of coal, 155,000 tons of pig iron, 126,000 tons of wrought iron and steel, and 25,000 tons of iron and steel products in the constructing shops. In the same year 400,000 tons of iron ore were smelted in 13 blast furnaces. All the Bessemer iron is run direct from the blast furnaces to the converters. In recent years the average annual production of steel rails has been 50,000 tons; of iron rails, 20,000 tons, and of locomotives, 100. The company employs 15,000 persons. The works at Creusot were founded in 1781, but they did not begin to assume any of their present importance until 1836, when they passed into the hands of Messrs. Schneider Brothers & Company.

The Terre Noire exhibit, although not so large as that of Creusot, was more consecutive and instructive in showing grades of steel and the results of using metalloids. The feature of the exhibit which attracted most attention was the display of solid steel castings, made by a process peculiar to Terre Noire, but a modification of the ordinary Siemens-Martin process. Cannon and projectiles are the principal articles made by this process, which produces a true steel free from blow-holes. The process has been briefly described to consist in the use of a silicide of manganese and iron.

The works of the Terre Noire Company are greatly scattered, the principal branch, however, being at Terre Noire, in the department of the Saône and Loire. The extensive operations of the present company had their origin in the purchase of the iron mine of La Voulté in 1810. In 1862 the erection of a Bessemer plant was commenced at Terre Noire, and in 1868 a Siemens-Martin plant was established at the same place. A Bessemer and Siemens-Martin plant were established at Besseges in 1868. The company owns 19 blast furnaces and all the usual appliances of an advanced and comprehensive iron and steel establishment. It has 15 Siemens-Martin furnaces, 8 Bessemer converters, 84 puddling and 55 reheating furnaces, 12 steam hammers and 28 roll trains for iron and steel. It employs 781 persons. At Terre Noire the metal is charged direct from the blast furnace into the Bessemer converter. The company is noted for its production in commercial quantities of high grade ferro-manganese in the blast furnace. Ferro-silicon is also manufactured at Terre Noire in the blast furnace. In 1877 the Terre Noire Company produced 106,000 metric tons of coal, 200,000 tons of iron ore, 158,000 tons of pig iron and spiegeleisen, and 147,600 tons of cast and wrought iron and steel.

The pavilion occupied by the enterprising company of iron and steel manufacturers, at Saint Chamond, also in the department of the Saône and Loire, was well filled with specimens of cannon and projectiles, railroad material and marine appliances, iron and steel beams, bars, plates and sheets, steel tires and springs, pig iron, spiegeleisen, iron ores, &c. The company make a specialty of railroad and marine work. The company which operates the extensive works at Saint Chamond has a capital of \$2,600,000; employs from 5000 to 6000 workmen, and manufactures from 40,000 to 45,000 tons of iron and steel annually. Its works proper are in five divisions, and in addition it has seven blast furnaces—four cold-blast charcoal in Corsica and three hot-blast coke near Saint Chamond.

In the main building of the Exposition and in the annexes there were exhibited the products of a majority of the iron and steel establishments of France. The coal company of Anzin, the largest mining company in France, exhibited a fine model of its mines, at which are employed about 15,000 persons. This company owns about 70,000 acres of land and produces about 2,000,000 tons of coal annually. The display made by France of steam engines and locomotives was the largest in the Exposition, and showed to great advantage. The largest engine in the Exposition building was a French engine of 700-horse power. The display of pumping machinery was large, as was also that of machinery for the manufacture of beet sugar, which machinery we have not yet had occasion to make in our own country. In mining machinery the French department was rich, and it was apparent that in the working of coal mines especially, the French had made great progress and have probably no superiors. Of agricultural machinery the French display was exceedingly creditable.

The French display of machine tools, wood-working machinery, textile machinery,



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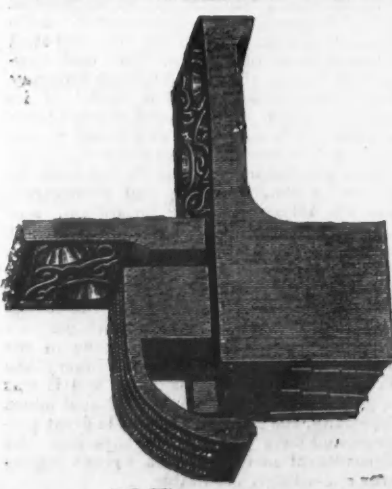


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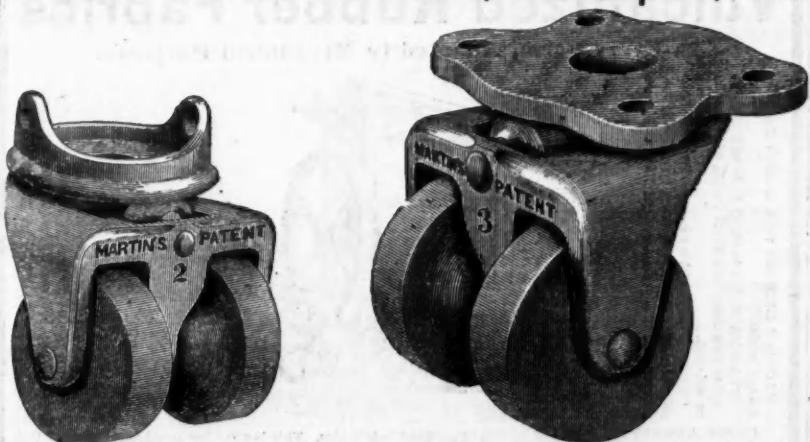
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## GREAT BRITAIN.

The exhibit at Paris by Great Britain of iron and steel and their products has been freely characterized by representative Englishmen, and by representative English journals, as incomplete and unsatisfactory—not worthy of the vast mineral resources and still vaster metallurgical progress of their country. Taken in detail the display of these articles may have justified this criticism; but as a whole it was extensive, varied, and exceedingly suggestive of mechanical excellence. The display of agricultural implements and machinery, of textile machinery, and of general hardware was the finest in the Exposition. The entire display of machinery and tools was more than creditable—it was magnificent; and yet the exhibit of iron and steel and their products by the leading nation of the world engaged in their manufacture, was not such as she could have made nor such as was due to her reputation. Especially was there noticeable the absence of a large assortment of the products of the Bessemer and open-hearth processes, in the invention and perfection of which processes Great Britain is entitled to the highest honors. Such products as were exhibited were chiefly Bessemer rails and Siemens-Martin plates.

The prominent firms of Bolekew, Vaughan & Co., of Middlesbrough, Brown, Bayley & Dixon, John Brown & Co., and Charles Cammell & Co., of Sheffield, exhibited samples of their Bessemer rails, axles, &c. Steel armor plates formed an impressive feature of their exhibits. A Bessemer steel boiler plate of superb quality, was exhibited by the West Cumberland Iron and Steel Company. Of Siemens steel, made by the "ore" process, the only noticeable display was made by the Landore Company, of which Dr. Siemens himself is the head.

One of the most interesting of the British steel exhibits was that which embraced various samples of the "Whitworth metal," to which much importance has been attached in Great Britain in connection with the manufacture of ordnance and other articles by the Siemens and Siemens-Martin processes. The metal is made of more than ordinary solidity and tenacity by being cast under hydraulic pressure.

The exhibit made by the cast steel makers of Sheffield was not large, but it was interesting and valuable. The most extensive of the Sheffield cast steel exhibits was that of William Jessop & Sons, who exhibited a full assortment of their products. Sheffield also made a good display of cutlery, saws and edge tools, and this was supplemented by like contributions from other British manufacturing centers; but the whole British exhibit of these articles was inferior in extent to that of France, and in some respects was fully equaled by it in quality.

Of iron products proper and the raw materials of their manufacture the best display in the British section was made by the Cleveland and North of England district. The ironmasters of this district showed commendable enterprise in the extent, variety and neatness of their display. The Cleveland and North of England district is the most productive iron district in the world. It embraces less than three English counties—Northumberland, Durham and the North Riding of Yorkshire, and yet its annual production of pig iron during the years 1871 to 1878, both inclusive, averaged over 2,000,000 tons. The district produces over 31,000,000 tons of coal annually, or about 23 per cent. of the immense product of the kingdom. Until a year or two ago it was also very prominent in the manufacture of finished iron.

The district of South Staffordshire is the great center of the finished iron trade of England, but of the large iron interests packed in this small territory very little display was made at Paris.

The iron and steel industries of Scotland and Wales were very meagerly represented. The great iron shipbuilding firms on the Clyde, the Tyne and the Thames made no sign. Of iron bridges, or the parts composing them, there was no display worthy of special mention. Of the excellent coal and coke of the United Kingdom the display was ample.

But what Great Britain lacked in iron and steel exhibits she made up in all kinds of machinery. Her display of agricultural machinery was very large, the best she ever made, but its merits were stoutly contested by French and American exhibitors. A prominent feature of the British agricultural machinery exhibit was the steam plow, which has not yet been brought into use in either France or America, except experimentally, although largely employed in England. In the British section there was a display of stationary, portable, locomotive, fire and marine engines that was almost bewildering in its extent and variety. The exhibit of textile machinery was magnificent and unequalled.

The display of tin andterne plates and their products was, as might have been expected, large and creditable. As the manufacture of these plates is strictly a branch of the iron industry, and a very extensive branch of the British iron industry, the fact may here be noted that it has scarcely an existence in the United States, the second in rank among iron-producing countries.

The adaptation of steel to shipbuilding was not shown in the British section by the

presentation of comparative or other tests made by the British Admiralty or the British Lloyd's, although experiments on a large scale, favorable to steel, had been made by both these agencies prior to the opening of the Exposition; nor were the bridge-building qualities of steel fully illustrated at Paris by Great Britain, although her engineers have made numerous experiments in its use for this purpose.

In producing her enormous annual yield of pig iron Great Britain has mainly relied upon her own supplies of iron ore. In 1877, however, she imported 1,142,308 tons, principally from Spain and Algeria, for use in her Bessemer steel works. Only two districts in Great Britain—Northwest Lancashire and Cumberland—can supply large quantities of ores suitable for Bessemer steel. The importation of foreign ores for Bessemer purposes is absolutely necessary.

## GERMANY.

Statistics establish the fact that Germany is entitled to a place in the front rank of iron and steel producing countries, but none of her industries were represented at the Paris Exposition. Since the war with France and the acquisition of Alsace and Lorraine, the German Empire, including for the purposes of this report the Grand Duchy of Luxembourg, has greatly increased its annual production of iron and steel; the payment of the large French indemnity serving to stimulate all German industries, and Alsace and Lorraine contributing about 20 blast furnaces and several large rolling mills, steel works and foundries.

Germany is to-day the third among iron-making and steel-making nations, Great Britain and the United States alone out-ranking her, while she probably ranks next to Great Britain as a coal-producing country. A study of the resources possessed by Germany for the manufacture of iron and steel shows that they are both extensive and varied. But the location of the coal and iron ore at points remote from the sea coast and from each other, results in making both the coal and iron industries, in a very large degree, the prey of foreign competition, water transportation for British coal and iron being much cheaper to German sea ports than railroad or canal transportation to the same markets for the products of German mines and iron works. The German iron trade at present labors under still another difficulty in the removal, on the 1st of January, 1877, of all import duties on iron and steel. The government is, however, giving close attention to the needs of the iron and coal industries.

Many of the furnaces of Germany possess all the approved modern appliances, while comparatively few are wholly antiquated in style and naked in equipment, and there is observable a vast amount of enterprise and skill in their management. German rolling mills and steel works are also mainly projected on a liberal and progressive scale. Krupp's steel works at Essen, in Rhenish Prussia, are well known to be the largest in the world. A recent publication enumerates 16 German iron and steel companies, each of which had either absorbed over 4,000,000 marks, or \$1,000,000, or had been organized with a capital stock of this amount.

The first Bessemer steel works in Germany were built about 1865, and in 1876 there were no less than 19 such establishments, containing 78 converters. Figures have been produced to show that the average yield of German converters when at work is only between one-third and one-fourth that of converters in the United States. This is certainly not a creditable showing for Germany, but it may be said in extenuation that the Bessemer practice of the United States is not equaled by that of any other country in the world. Even Great Britain falls far behind it. With 114 converters, a majority of which may be presumed to have been active, that country produced in 1878 only 850,000 tons of ingots, while the United States in the same year, with 22 converters, not all of which were active, produced exactly 653,773 English tons of ingots.

To illustrate the value of the accession to German iron resources and manufactures resulting from the acquisition of Alsace and Lorraine, the following statistics relating to their largest iron-making establishment are given as I find them in a foreign journal. They relate to the works of the Messrs. De Wendel, at Hayange, Moyeuve and Stiring Wendel: "During the year 1877 these combined works produced 467,000 tons of iron ore; 322,000 tons of coal; 145,000 tons of pig iron; 87,000 tons of puddled bars; 33,500 tons of merchant bars; 8500 tons of sheet iron; 26,700 tons of rails and sleepers; 2000 tons of small iron-work for railways and mines; 2500 tons of iron wire; 1400 tons of French nails, and 8000 tons of general castings." The Messrs. De Wendel have in all 11 blast furnaces, but the pig iron made is not suitable for steel. At Moyeuve were rolled the first rails for the first French railway. Both pig and bar iron are said to be produced by the Messrs. De Wendel at a lower cost than is possible at any other works on the Continent.

The cast steel manufactory at Essen has existed since the year 1810. It has been operated by the present owner, Alfred Krupp, since 1826, and since 1848 for his sole account. The number of workmen at the close of 1877 amounted to 8500. There are in these works 1648 furnaces; 77 steam hammers, the largest of all weighing 50 tons; 18 trains of rolls, and 1063 machine tools. One of the steam engines at Essen is of 1000 horse power. When all existing facilities are employed the works can produce in 24 hours 2700 rails, which will lay 11 1/4 English miles of track; 350 ties; 150 locomotive and car axles; 180 ear wheels; 1000 railroad springs; 1500 grenades, &c. In one month there can be produced 304 field guns and guns of large caliber. At the various works of Herr Krupp there were employed 5300 workmen in addition to those already enumerated. These mines embrace 4 coal mines and 562 iron ore mines, including ore mines near Bilbao, in Spain. Four large steamers owned by the works, each of 1700 tons burden, besides leased steamers, are engaged in the transportation of Spanish ores to his furnaces on the Rhine. Another steamer, of 1000 tons burden, is being constructed. In addition to the cast steel

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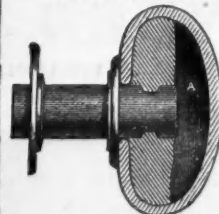
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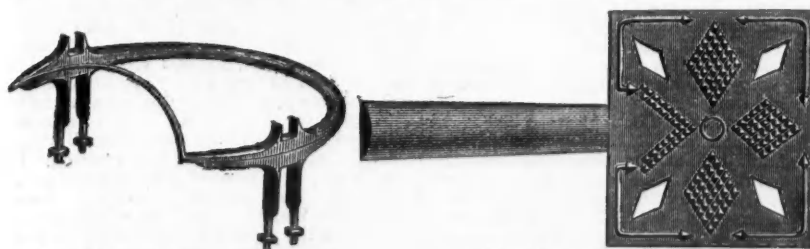
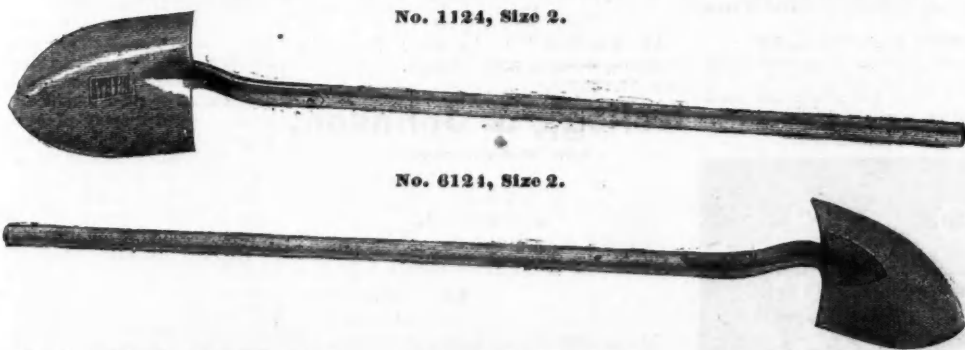
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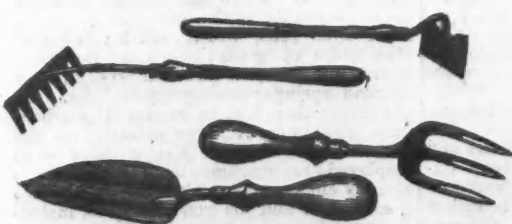
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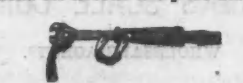
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works and the ore and coal mines, there are 14 blast furnaces, at which 700 workmen are employed. Herr Krupp also owns and operates, at Sayner, two small blast furnaces for the manufacture of spiegeleisen, and other auxiliary iron enterprises.

Germany has been very prominent in the substitution of iron for wood in the building of cars for railroads, in the construction of permanent way for railroads, and in the construction of public buildings and dwellings, telegraph poles, props for mines, &c. The Messrs. De Wendel are running two trains of rolls constantly on iron railway sleepers, and have produced many thousand tons of them.

In some specialties, as the manufacture of wire and scissors, German manufacturers have no superiors. Westphalian wire has a world-wide reputation. In Westphalia are also manufactured for domestic and foreign markets large quantities of anvils, axes, agricultural implements, tools, chains, &c. At Berlin are some of the most extensive manufactories of machine tools, locomotives and other engines, agricultural machinery and beet-sugar machinery in the world. Germany is a large exporter of machine tools. In the manufacture of textile machinery, as of textiles themselves, Germany occupies an advanced position. In 12 locomotive works in Germany over 1000 locomotives have been built annually. At the large works of Albert Borsig (recently deceased) at Berlin, 1031 locomotives were manufactured in the six years prior to April, 1873, of which 300 were sent to Russia. This establishment, and an auxiliary establishment in Upper Silesia, under the same ownership, manufacture the pig iron, rolled iron, steel, boiler plate, axes, &c., required in the construction of locomotives, and besides supply large quantities of these articles to the German market. Siemens-Martin steel is largely made at the works in Upper Silesia. The number of workmen employed at these latter works in 1875 was 3500.

Germany has more miles of railroad than any other country, except the United States, exceeding even Great Britain, amounting at the beginning of 1878 to 18,828 miles.

## BELGIUM.

The iron and steel of this small, but wonderfully busy country, were well represented at the Paris Exposition. Belgium has an abundance of coal, but now contains very little good iron ore. Owing to this scarcity, she is largely an importer of iron ore and of pig iron. These she converts into manufactured iron and steel, for which she finds her chief market abroad.

There is something amazing in the comparative prosperity of Belgian iron and steel industries, with their spare natural resources, at a time when the same industries of more favored countries are experiencing more or less depression. Its causes may be found in cheap labor, long hours, the technical education of workmen, strict economy in administration, attention to the minutest details, and the use of the most approved labor-saving machinery. The population of Belgium is very dense (5,000,000 in 12,000 square miles), and the country is a hive of industry. There is no room for drones. Strikes are exceedingly rare, but when they do occur they soon terminate, for the government will not tolerate them. Personal economy is essential to existence. The labor of women and children is utilized. Railroads through its own territory, favorably situated sea-ports, and a trading spirit handed down from the Middle Ages, aid in securing foreign purchasers for Belgian manufactures.

As was the case at Vienna, the principal exhibit of Belgian iron and steel at Paris was made by the John Cockerill Society, of Seraing, five miles from Liège. Specimens of the Bessemer steel manufactured by this company embraced razors, knives, swords, bayonets, tools of all kinds, screws, wire, plates and bars.

The works of the John Cockerill Society were established in 1817 by John Cockerill, an Englishman by birth, but a Belgian citizen. In 1838 he became embarrassed, dying in 1840. In 1842 the works passed into the hands of the John Cockerill Society, and have since been greatly extended. The first Bessemer steel works in Belgium were erected by this company in 1862. Large purchases of iron ore mines and coal lands and collieries have been made by it from time to time. It is a large owner of iron ore mines in Spain. The works now embrace 7 blast furnaces, with two more in course of erection; 2 large foundries; a large iron rolling mill, a Bessemer steel plant, with 8 converters, each of 7 tons' capacity, a rolling mill, &c.; a hammer mill for large forgings; a shop for small forgings; constructing shops for the manufacture of locomotives, marine and other engines, and other machinery; boiler, bridge and ship-iron shops, &c. At Hoboken, near Antwerp, the company owns and operates an extensive shipyard, at which 410 steamships, transports, monitors and armored vessels have been built. It owns several vessels that are engaged in the transportation of iron ore. Its nominal capital stock is \$3,000,000. It now employs 8850 workmen at all its enterprises, to whom it pays \$2,000,000 annually as wages.

Other exhibits in the Belgian section embraced iron and Bessemer and Siemens-Martin steel in various forms. The display of beams, girders and joists was very large, some of the specimens being of exceptional lengths and novel sections. Locomotives and railway cars from the shops of the Compagnie Belge, of Brussels, and several other companies were among the prominent exhibits. But the display of general hardware, fine cutlery, small castings, edge and other tools, and agricultural machinery was neither large nor impressive. The Belgian iron and steel industries appear to have been developed most in the direction of rolling mill products and heavy machinery. The bar iron of Belgium has long been celebrated for its excellence. There were creditable displays of coke and compressed fuel. Of the Belgian exports of iron and steel in 1878 no less than 58,282 metric tons were sent to Great Britain, of which over 49,000 tons were merchant iron, and the remainder was nails, rails, &c.

## AUSTRIA AND HUNGARY.

Americans do not usually associate the

Austrian Empire with the manufacture of iron and steel on a large scale, and yet these are among its most important productions. Austria (in which I include Hungary) is the sixth among iron and steel producing countries, and she occupies no mean place as a manufacturer of machinery. As a manufacturer of textiles, glassware and other light products of skilled industry, as a manufacturer of beet sugar, and as the liberal promoter of an extensive railway system, she occupies a position of well-deserved prominence.

The principal Austrian exhibitors of iron and steel and of railway material at Paris were the Austrian and Hungarian State Railway Companies, closely followed, however, by other large companies. It is a peculiarity of the iron and steel and coal industries of the empire that the government railroad companies are extensively engaged in their development and at widely separated localities, and that the companies which were organized expressly and solely to engage in these industries have their enterprises as greatly scattered as those of the railroad companies. These results have largely grown out of a spirit of speculation which was rife in Austria a few years ago, many of the speculations proving to be disastrous.

The exhibit of iron and steel and their products which was made by Austria embraced the same classes of heavy articles that were exhibited by France, Great Britain and Belgium. The locomotives were among the finest in the Exposition. About 1840, when Austria began to build railroads, she adopted the American locomotive as a model, and the Austrian locomotives of today are very similar to those of the United States. Two styles of iron permanent way were exhibited, several systems of which have been introduced upon Austrian and Hungarian railroads. Of sugar-making machinery there was a large display, but of agricultural machinery and implements the display was greatly inferior to that of France, Great Britain or the United States. The exhibit of wood-working machinery was small. Stationary and portable engines were numerous in the Austrian and Hungarian sections. The exhibit of wire, wire rope and wire-work of all kinds was very extensive. Car and carriage springs were shown in profusion, as were railway appliances generally. The display of cutlery was meager, and very inferior to that made by Austria at Vienna. Like Belgium, the Austrian display of iron and steel and their products at Paris was notably rich in heavy articles and heavy machinery. It was not seriously deficient in small wares, but they did not form one of its prominent features.

The spathic ores of Austria and Hungary have long been celebrated as among the best steel-producing ores in the world. In Styria and Carinthia are situated the two famous iron mountains, Erzberg and Hüttenberg, which were worked by the Romans and by the Celts 2000 years ago. In late years the Erzberg has yielded 175,000 tons of iron ore annually. Lignite of excellent quality is found in Styria, and it is now used with satisfactory results in blast furnaces and puddling furnaces. Peat is also largely used in Styrian puddling furnaces, partly in the ordinary way and partly in connection with Siemens regenerative furnaces. True bituminous and anthracite coals are found in the Alpine provinces, but not in appreciable quantities.

In some portions of Bohemia, Moravia, and Austrian Silesia there is good coal in large quantities, which makes an excellent coke, but in others coal is scarce or impure, and lignite and wood are used. Lignite is abundant and of good quality. Included in the iron ores of this division are some rich deposits of magnetic, specular, spathic and red and brown hematites. Many of the ores are manganiferous. Bloomeries were only a few years ago mainly used in this district; now, however, puddling furnaces are numerous.

The extensive provinces lying wholly or in part in the Carpathian mountains—Hungary, Galicia, Bukovina, Transylvania, and others—have a variety of ores. German steel made in Styria and Carinthia was celebrated for its excellence 50 years ago, when the annual product was about 15,000 tons, a part of which found its way to American markets. There are now 13 Bessemer steel works in the empire, with 32 converters. At most of the works the pig iron is run direct from the blast furnace into the converter. Spiegeleisen is manufactured at several places in Austria; ferro-manganese is also made. Siemens furnaces have been used in Austria since 1858. In 1867 the Siemens-Martin process was introduced. The manufacture of tin plate has been thoroughly established at several places.

The foregoing references appear to establish conclusively the fact that Austria is possessed of sufficient resources to enable her to supply her own iron and steel wants, and recent information leads to the conclusion that the government of the empire will pursue a revenue policy that will tend at least to confirm Austrian iron and steel manufacturers in the possession of the home market.

(To be continued.)

From a copy of the Connecticut Courant, dated Oct. 29, 1764, we call the following item, which, although it can hardly come under the head of "Manufacturing News," may be of interest as denoting the state of American industries at the middle of the 18th century: "There seems to be a disposition in many of the inhabitants of this and other neighboring governments to clothe themselves with their own manufacture. At Hampstead, on Long Island, in the Province of New York, a company of gentlemen have set up a new woolen manufactory and have given notice to gentlemen, shopkeepers and others of any of the provinces, that by sending proper patterns of any color they may be supplied with broad-cloths, equal in fineness, color and goodness, and cheaper than any imported; the proprietors give good encouragement to any persons who are in any way vested in the woolen manufactory, such as wool combers, weavers, clothiers, sheers, dyers, spinners, carders, or understand any branch of the broad-cloth, blanket or stroud manufactory."



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AND  
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Hardware and Metal Prices.

In another column we print a despatch by  
the United States Consul at Florence to the  
Department of State, on the subject of the  
sale of steel rails in that market. We give  
it in full, without much fear of its inducing  
any enterprising steel maker or reckless  
speculator to enter the Italian rail market  
with a cargo of American steel rails, our in-  
tention being only to show, by a striking ex-  
ample, how much caution must be used by  
our manufacturers and merchants in accept-  
ing and acting upon the information gathered  
by the representatives of the government in  
foreign countries. From what we know of  
the state of the steel rail trade in Italy, and  
the relations of English, Belgian and Ger-  
man makers to that market, we accept Mr.  
Schuyler Crosby's statements as correct, but  
we need hardly point out that the facts given  
by him by no means "demonstrate that it  
may be possible for even American manu-  
facturers of steel rails to compete with

"the English producers in Sheffield in sup-  
plying foreign countries, provided they  
can have equal advantages in rates of  
freight with the German and Belgian  
firms." We are forced to believe that our  
representative at Florence has never seen  
an American quotation for steel rails, or  
else he would not fancy a chance for an  
opening for American rails at the remunera-  
tive figure of about \$30 per ton, delivered.  
If our consuls at foreign ports are to ad-  
vance our commercial relations with other  
countries, they should not alone seek in-  
formation in regard to the trade of the district  
in which they are stationed, but should also  
keep posted on what is going on at home.  
In fact, the basis of their operations—the  
first and most imperative condition for suc-  
cessful and valuable work on their part—  
should be a thorough and complete knowl-  
edge of the state of affairs in this country.  
Ignorance on this score is likely to destroy  
public confidence in their judgment of for-  
eign affairs.

## American Iron and Steel Production in 1878.

The American iron trade is to be congrat-  
ulated on the remarkable early presentation  
of the statistics of its production in the year  
1878, which have just been made public.  
The American Iron and Steel Association is  
noted for the speed which it makes in the  
collection of this valuable information from  
the hundreds of iron and steel manufactur-  
ers in the United States, but it has on this  
occasion surpassed itself in collecting and  
publishing these figures in just four months  
after the close of the year. Too much praise  
cannot be awarded the indefatigable secre-  
tary of the association, Mr. James M.  
Swank, for the energy with which he pushes  
this admittedly difficult work, but the Amer-  
ican manufacturers also deserve great credit  
for so promptly responding to his applica-  
tions for information, which must in many  
cases cause them much labor to present in  
the desired shape. We hope this condition  
of affairs may never change, but that there  
will always be, on the one hand, an efficient  
collector of these statistics, and, on the other  
hand, a hearty willingness on the part of the  
manufacturers to do their share of the  
work. There is now no groping in the dark  
for information about the condition of the  
iron trade, for the American Iron and Steel  
Association furnishes such accurate details  
of production from year to year that no one  
need go uninformed as to what is being done  
in any part of the country. The following  
table shows the production of all kinds of  
iron and steel in the United States in 1878  
as compared with 1877, in tons of 2000  
pounds.

Products.	1877.	1878.
Pig iron.....	2,314,585	2,577,361
Pig iron unsold, December 31.....	64,351	574,595
Bars, angles, bolts, rods and hoops.....	720,531	830,837
Plates & sheets.....	182,242	182,042
Nails in kegs.....	4,828,918	4,396,130
Iron rails.....	339,540	322,890
Bessemer steel rails.....	438,169	550,398
Open-hearth steel rails.....	9,397	9,397
Total rails.....	764,700	882,685
Bessemer steel ingots.....	590,587	712,226
Crucible cast steel.....	49,420	49,006
Open-hearth steel ingots.....	25,031	36,126
All other steel.....	31,994	8,556
Spiegeleisen (included in pig iron above).....	8,845	10,674
Blooms from ore and pig iron.....	47,300	50,048

The quantity of pig iron produced in 1878  
was 262,776 net tons greater than in 1877,  
and only 290,917 tons less than in 1873, the  
year of greatest production. At present,  
prospects are very favorable for an output  
in 1879 fully equal to that of 1873. The  
stocks of unsold pig iron were decreased  
67,786 net tons in 1878, and are now 221-  
219 tons less than they were at the close of  
1874. If the consumption of pig iron con-  
tinues to increase in this way, and there  
is every prospect that it will, the owners of  
blast furnaces will be able to reap some pro-  
fit from their investments before the close  
of the present year.

The production of bar, angle, bolt, rod,  
skelp and hoop iron was 110,306 net tons  
greater in 1878 than in 1877, and 124,873  
tons greater than in 1873. The quantity of  
plate and sheet iron rolled in 1878 was 200  
tons less than in 1877, but 12,873 tons greater  
than in 1873. The number of kegs of nails  
cut in 1878 was 432,788 kegs less than in  
1877, but 371,426 kegs greater than in 1873.  
The production of iron rails in 1878 was  
950 net tons less than in 1877, 438,172 tons  
less than in 1873, and 583,040 tons less than  
in 1872, the year of greatest activity in iron  
rail making. The quantity of Bessemer  
steel rails manufactured in 1878 was 118-  
229 net tons greater than in 1877, and 421-  
383 tons greater than in 1873. Open-hearth  
steel rails appear for the first time in the  
statistics of 1878. The total production of  
rails in 1878 was 117,976 net tons greater  
than in 1877, only 7392 tons less than in  
1873, and only 117,315 tons less than in  
1872, when the maximum was reached. It  
is quite likely that in 1879 the United States  
will make as many rails as it ever did.

The progress made in the manufacture of  
Bessemer steel is one of the wonders of the  
time. The production of ingots in 1878 was  
171,639 net tons greater than in 1877, and  
561,574 tons greater than in 1873. The  
quantity of crucible cast steel made in 1878  
was 2476 tons greater than in 1877, and  
8120 tons greater than in 1873. The pro-  
duction of open-hearth steel ingots increased  
11,095 tons in 1878 over 1877, and 32,626  
tons over 1873. Greater progress than  
this will be made in the manufacture  
of open-hearth steel in 1879, as quite a  
number of new works have commenced op-  
erations, or are rapidly being constructed,  
with the hope of getting to work before the

year closes. The production of blister,  
German, puddled and patent steel decreased  
3368 tons in 1878 as compared with 1877,  
and 5158 tons as compared with 1873. The  
total production of all kinds of steel was  
181,842 tons greater in 1878 than in 1877,  
and 597,162 tons greater than in 1873.

We are moving quite slowly in the manu-  
facture of spiegeleisen, our steel makers  
having made only 10,674 net tons in 1878,  
which is the most we ever made in one year,  
while 61,466 tons of spiegeleisen and ferro-  
manganese were used by the Bessemer steel  
works alone in that year, and the open-  
hearth steel works probably used 3000 tons.  
The large deficiency had to be imported. It  
remains with American iron makers them-  
selves to determine how long we shall be de-  
pendent on foreign manufacturers for this  
very essential material in the production of  
mild steel, because suitable ores are to be  
found here, or are easily imported, and the  
skill requisite to its successful manufacture  
can soon be acquired.

The production of blooms for sale to steel  
works, wire mills and plate and sheet mills  
varies but slightly from year to year. In  
1878 the manufacture of blooms from ore  
fell 88 net tons below the output in 1877,  
and 724 tons below that of 1873. But the  
production of blooms from scrap and pig  
iron was 2833 tons greater in 1878 than in  
1877, though it was 3795 tons below the  
make in 1873.

The comparisons made in the foregoing  
paragraphs between 1878 and 1877, show  
clearly that great progress was made in  
nearly every branch of the iron and steel  
trades, while the comparisons made between  
1878 and 1873 even, are not as unfavorable  
as one would have supposed. We made less  
pig iron and fewer iron rails in 1878 than in  
1873, but our increase over 1873 in the man-  
ufacture of steel was wonderful. In view  
of the very great activity in the trade in  
1878, there is but one thing to regret—that  
prices were not remunerative. The situa-  
tion in 1879 in this respect is, however, very  
encouraging to our iron and steel manufac-  
turers.

## The Iron Trade of France and Belgium.

After a long period of depression, of low  
prices and fierce competition, followed by  
the closing of the weaker establishments  
and a reduction in the output of the stronger  
ones, the French and Belgian iron trades  
seem to be entering upon more prosperous  
times. Early in March the first signs of a  
turn were noticed in the Paris market, as  
the demands for lower figures were suc-  
cessfully resisted by makers. This was fol-  
lowed by a somewhat easier feeling in the Haute-  
Marne and the Rhone-Loire districts, and in  
the beginning of April the ironmasters in  
the North of France took decisive action,  
advancing prices, the third advance having  
been agreed upon quite recently. In Paris  
the rise became an accomplished fact, bring-  
ing into the market a large number of buyers,  
whose efforts to obtain long contracts have  
proved unsuccessful. This movement, which  
it is hoped will become general, seems to have  
been brought about principally by an im-  
proved demand and by the prospects for the  
future, which are considered to be fair, es-  
pecially in view of the immense improve-  
ments contemplated by the Department of  
Public Works. M. De Freycinet, the minis-  
ter, does not seem to be inclined, however,  
to allow home producers to have matters en-  
tirely in their own hands, and has placed a  
large order for coal for the state railways in  
England. French colliery owners have been  
very sharp in their denunciation of this  
course, which has been defended on the  
ground that the French industries could not  
be favored more than they are, unless the  
principle of purchasing by public tender  
were abandoned. This decision foreshad-  
ows the probable course which will be taken  
by the government in letting the work for  
the new railway system, the greater  
part of which will be taken in hand  
during the next year. For this year  
about \$40,000,000 are to be expended.  
The railroad system of the country is to be  
extended, partly with the co-operation of  
existing companies, by the construction of  
about 160 roads, mostly short lines, ranging  
from 20 to 30 miles in length. The amount  
of new capital which is to be invested in  
railroads, canals and other public improve-  
ments in 1880, will probably reach about  
\$80,000,000. This will, in all probability, be  
increased in the following years. Algeria,  
it appears, is also to come in for quite an  
important share in the distribution of this  
enormous government patronage. Mean-  
while the tariff agitation is continued with  
a prospect of ultimate success, so that on  
the whole the future is brightening for  
French ironmasters.

A similar, though not so pronounced, a  
revival has been going on in Belgium. The  
early spring trade was a disappointment,  
and though exports to England continued,  
it was stated that foreign orders were closely  
contested. The chief cause for dissatisfac-  
tion was less with the volume of orders  
than with the prices, which, however, at  
the beginning of April, showed a tendency  
to rise, notably in the Charleroi district.  
The government has been in the market  
quite extensively, and though nothing like a  
sudden improvement is expected, it is be-  
lieved that the worst has passed. Tenders  
for state railways are still open to home  
manufacturers only, so that the policy initi-  
ated in that respect has been maintained.  
As showing how closely the iron trade is

pressed by steel manufacturers, we may cite  
a recent competition in Belgium for a lot  
of about 2500 tons of metallic sleepers, which  
in a measure have been regarded by the  
Continental iron trade as a relief for their  
large producing facilities, partially idle  
through the loss of the rail trade. This de-  
mand is also in danger of being met by steel.  
Messrs. Blondiaux & Co., of Thy-le-Châ-  
teau, who carried off a former contract of  
6000 tons, offered 123.50 francs a ton, ex-  
clusive of the small material for the sleepers,  
estimated at 7 per cent. in weight of the  
whole; the Monceau-sur-Sambre works  
asked 137.50 francs, inclusive of small mate-  
rial. The Cockerill works proposed to take  
500 tons of steel sleepers at 149.50 francs,  
diminishing the thickness of the metal so  
as to reduce its weight by 10 per cent., while  
its resistance would be increased by 40 per  
cent. This would make the price of an 88-  
pound iron sleeper, with about 7 pounds of  
bolts, &c., 5.40 francs—only 0.37 francs less  
than the material made of steel. How long  
this margin will suffice to secure this trade  
for iron rolling mills it is difficult to say.  
It cannot be doubted, however, that en-  
gineers will urge the acceptance of the  
stronger material whenever circumstances  
warrant it, so that too much reliance cannot  
be placed upon the continuance of this new  
and growing trade by Continental iron-  
masters.

The Belgians are energetically continuing  
their efforts to gain a foothold in foreign  
markets, and have turned their attention of  
late to Mexico and South America, so that  
their movements should be closely watched  
by those American manufacturers who are  
working in a similar direction. Thus, we  
find a report in the *Métallurgie*, that the  
Dyle, Bacalan Co. are to furnish the  
Brazilian government with about 2000 tons  
of manufactured iron, to be used in harbor  
improvements for Rio Janeiro. It is re-  
ported that the Angleur Steel Company has  
taken a contract for 10,000 tons of rails at  
an exceptionally low figure (125 francs, or  
about \$24 per ton), deliveries to continue  
through 1879, 1880 and 1881. It is surmised,  
as the company has purchased the Thomas  
Gilchrist patent, that it is already discount-  
ing on the margin expected from that  
source.

## The New Postal Law.

The postal law passed March 3, and which  
went into effect the first of the present  
month, is in many respects better than the  
old law, so far as it affects the business pub-  
lic. The principal changes to be noted are  
those which have been made in respect to  
classification of mailable matter. The old  
law in this particular was complicated; cer-  
tain things, like blanks and circulars, were  
charged a higher rate of postage than other  
things, such as newspapers and pamphlets.  
The fact of inclosing a circular or blank in  
a book or newspaper, rendered the whole  
package subject to a higher rate than would  
have been charged on the same article if no  
blank or circular had been inclosed. This  
was a condition of things which imposed  
great hardship upon hardware manufac-  
turers and others who had, for example,  
been in the habit of sending out catalogues  
with a discount sheet or circular inclosed. It  
increased their postage bill, besides separat-  
ing the discount sheet and catalogue. The  
rate on circulars being double what it was on  
books and newspapers, rendered it neces-  
sary, upon the score of economy, to send  
the two articles in separate wrappers, which  
in a measure destroyed their efficiency. By  
the law which has just gone into effect this  
difficulty is entirely removed. All miscel-  
laneous printed matter is now at the same  
rate of postage.

By the new arrangement, mailable matter  
is of four classes: 1. Written matter. 2.  
Periodical publications. 3. Miscellaneous  
printed matter. 4. Merchandise. In the  
first class no important changes have oc-  
curred. Rates remain as heretofore. A  
provision is made for transmitting unpaid  
duly certified letters of soldiers, sailors and  
marines in the service of the United States  
to their destination, to be paid on delivery.  
All second-class matter is charged at the uni-  
form rate of 2 cents a pound or a fraction  
thereof, instead of different rates for differ-  
ent classes of periodicals, as prevailed  
formerly.

It is the third and fourth classes in which  
manufacturers and business men generally  
are especially interested, and in which  
very important changes have been made.  
The old law named only three classes, and  
the addition of a fourth has been made, to  
simplify classification. Third-class matter  
is declared to embrace "books, transient  
newspapers and periodicals, circulars and  
other matter wholly in print, proof-  
sheets, corrected proof-sheets, and manu-  
script copy accompanying the same." The  
law further provides that "upon matter of  
the third class, or upon the wrapper in-  
closing the same, the sender may write his  
own name or address, and the word  
'from' above and preceding the same, and  
in either case may make simple marks, in-  
tended to designate a word or passage of the  
text to which it is desired to call attention.  
There may be placed upon the cover or  
blank leaves of any book, or of any printed  
matter of the third class, a simple manu-  
script dedication or inscription that does not  
partake of the nature of a personal correspon-  
dence."

The rate of postage on third-class matter  
is fixed at one cent for each two ounces or  
fractional part thereof, and must be fully

prepaid by postage stamps affixed to the  
packages.

In explanation of the terms used in  
designating third-class matter, the law de-  
clares "that 'printed matter,' within the  
intendment of this act, is defined to be the  
reproduction upon paper, by any process  
except that of handwriting, of any words,  
letters, characters, figures or images, or  
of any combination thereof, not having  
the character of an actual and personal  
correspondence." The term "circular" is  
defined to be "a printed letter which, ac-  
cording to internal evidence, is being sent  
in identical terms to several persons. A cir-  
cular shall not lose its character as such  
when the date and the name of the ad-  
dressed and of the sender shall be therein  
written, nor by the correction of mere typog-  
raphical errors in writing."

These terms clearly define the status of  
lithographed letters, and of letters and cir-  
culars printed by the papyrograph process,  
by the electric pen and by other similar  
methods, and which, to a greater or less ex-  
tent, has been in controversy until very re-  
cently. It clearly places them in the cat-  
egory of miscellaneous printed matter. The  
privilege of dating circulars, and of writing  
upon them the name of the addressed and  
of the sender, will be greatly appreciated by  
the business public.

The fourth class, it is declared, shall em-  
brace all matter not included in the other  
classes, "and which is not in its form or  
nature liable to destroy, deface, or other-  
wise damage the contents of the mail bag,  
or harm the person of any one engaged in  
the postal service." In weight, the pack-  
ages are limited to four pounds, except in the  
case of single books weighing in excess  
of that amount, and certain government  
books and documents which are specified in  
the law. The act further provides that  
"upon any package of matter of the fourth  
class the sender may write or print his  
own name and address, preceded by the  
word 'from,' and there may also be  
written or printed the number and names  
of the articles inclosed; and the sender  
thereof may write or print upon or attach  
to, any such article by tag or label, a mark,  
number, name or letter for the purpose of  
identification."

The postage on fourth-class matter is at  
the rate of one cent an ounce, or fraction  
thereof. The law further provides that  
matter of the third or fourth class "con-  
taining any writing or printing other than  
indicated in the preceding section," (quoted  
above) "or made in the manner other than  
therein indicated, shall not be delivered ex-  
cept upon the payment of postage for mat-  
ter of the first class, deducting therefrom  
any amount which may have been prepaid  
by stamps affixed to such matter." This  
provision prohibits marking prices upon  
samples. They may be marked for identi-  
fication, but the prices must be sent as first-  
class matter.

The act providing for the registration of  
third-class matter as defined under the old  
law, remains in force, and by the changes  
now made applies to the present third and  
fourth classes. This law provided for the  
registration of any package of such matter  
at the fixed rate of 10 cents per package, in  
addition to the regular postage.

It is provided that all except first-class  
matter shall be subject to examination.  
"The Postmaster-General may prescribe by  
regulation the manner of wrapping and se-  
curing for the mails all packages of matter  
not charged with first-class postage, so that  
the contents of such packages may be  
easily examined; and no package the con-  
tents of which cannot be easily examined,  
shall pass in the mails or be delivered at a  
less rate than for matter of the first class."

Some novelties in postal stationery are  
provided for. Section 28 reads as follows:  
"The Postmaster-General is hereby author-  
ized to take the necessary steps to introduce  
and furnish for public use a letter-sheet en-  
velope, on which postage stamps of the de-  
nominations now in use upon ordinary  
envelopes shall be placed. And the Post-  
master-General is also authorized to intro-  
duce and furnish for public use a double  
postal card, on which shall be placed two  
one-cent stamps, and said card to be so  
arranged for the address that it may be  
forwarded and returned, said cards to  
be sold for two cents apiece; and also to introduce and furnish for public  
use a double letter envelope, on which  
stamps of the denominations now in use  
may be placed, and with the arrangement  
for the address similar to the double postal  
card." There is a provision in connection  
with this section which we understand  
operates to delay the issue of these novelties  
for the present. It makes their intro-  
duction at this time dependent upon an ap-  
propriation already made for the current  
year for postal cards and letter envelopes,  
which is fully demanded for these items  
alone, leaving no amount available for the  
new articles. Further legislation, accord-  
ingly, is necessary before these novelties  
will be available for use.

The law, in its most important features,  
has been passed as recommended by the  
Post Office Department, being prepared by  
Mr. A. H. Bissell, who last year, under the  
direction of the Postmaster-General, visited  
the principal cities of the country, holding  
conferences with prominent business men, as  
well as the post office officials, in the places  
visited. The bill was prepared with great  
care. In its wording and in its provisions  
throughout it bears the mark of practica-



common sense, which is much more than can be said of many of the postal regulations of recent years. Useless discriminations are avoided, and there is evidence of careful consideration of the reasonable requirements of the business public in all its provisions.

The Mining Journal has again given its readers some reliable information as to the amount of ore sold by the Lake Superior mines for the coming season's delivery. The occasion was the remarks of our Cleveland correspondent to the effect that the standard mines were well sold up. The Journal, commenting on this, says: "What is said above in reference to the standard mines 'being well sold up' may be partially true of the Republic, but it certainly is not true of any of the others. When the 'mines are well sold up at this season of the year, it is customary to increase the 'mining forces, so as to insure the filling of contracts and provide for contingency of additional orders during the season; there has been no such increase as yet, and mine owners are confident of being able to fill all orders without it. Should the furnace owners find themselves afflicted before the season is past with a 'distressing scarcity of ore,' it will be simply because the mines have not been 'well sold up,' as asserted by the correspondent in question. They are certainly 'in condition to prevent any such 'distressing scarcity' if assured, a reasonable length of time in advance, that their product can be 'well sold up.' Information received from a gentleman prominent in the ore trade, only last Saturday, confirms the statement of our Cleveland correspondent. Through him we learn that the Champion mine was all sold up at \$6.75, and had refused offers of 15,000 tons; the Lake Superior had disposed of all its output at \$6.50, with the exception of 10,000 tons, and for this lot an option was out. The Jackson mine has sold its ore; Republic has contracted for 130,000 tons, and the Cleveland for 30,000 tons. This looks very much as though the standard mines were well sold up, as stated.

In the middle of last month a strike occurred in the great Durham (England) coal field which, from several points of view, may fairly claim to possess an exceptional interest. It puts to a severe test the system of arbitration in labor disputes in a district in which hitherto it has proved, for many years, an effectual means of bridging over and settling every serious rupture between capital and labor. In 1877 a sliding scale was introduced to regulate wages, which was virtually repudiated by the colliery owners, who demanded a reduction of 15 per cent. on underground and 12½ per cent. on surface labor. According to mail advices, the masters declined to refer the matter to arbitration; but by telegraph, under date of the 4th inst., we learn that the masters' association at Durham has appointed a committee of fourteen to meet a similar committee of the miners' associations, with power to settle the questions at issue. It is to be decided to-morrow whether a miners' committee will be appointed, and then probably the strike will be ended on the basis of open arbitration. The strike affects 300 collieries, producing 25,000,000 tons of coal per annum and furnishing employment to 50,000 hands. It very severely injures the Cleveland iron trade, and it is feared that, if continued, it will lead to an extensive suspension of operations, quite a number of furnaces having been damped down.

In the account given of the compromise effected between Duncan & Son and the flint glass workers, it is stated by the Pittsburgh papers that "the employees have agreed to allow their employers the privilege of 'hiring and discharging men at their discretion.' This is certainly a most gracious concession on the part of the workmen, and one for which Duncan & Son should be duly and overwhelmingly grateful. It really seems strange that there should be any question as to the right—not the privilege—of any manufacturer to hire whom he pleases, but it is evident that, with industrial society constituted as it is at present, this right must, of necessity, constantly be called in question, especially in those localities and by those manufacturers who will not recognize the unions.

The Austrian manufacturers of iron and hardware are trying hard to put a stop to the ruinous prices caused by excessive production, by organizing a system of combinations. The first to come to an agreement as to the lowest figures admissible were the rail manufacturers, who were followed by the bar iron, plate and axle makers. Quite recently the tin-plate manufacturers and Silesian wire rollers have yielded to the arguments in favor of coalition, and since the failure of a large blast furnace owner in the chief pig iron producing district of Austria, it is hoped that a similar arrangement may be brought about among the smelters. Naturally there has been some opposition to this new movement, so that matters have not gone on as smoothly as its promoters hoped. Thus it seems that many dealers have continued to throw their stocks upon the market at figures considerably below the rates agreed on; but it is believed, in view of the rapid exhaustion of these stocks, that these irregular sales will soon cease to disturb the market. Another

grievance is that trade has been taken away from those who are seeking to maintain prices, by establishments who had not entered into the coalition. We learn, for instance, that a large order for plates and beams, which in the ordinary course would have gone to Styrian and Carinthian makers, fell into the hands of works in Moravia, who, not having joined in any combination, found it possible to divert trade from its usual channels. Austrian manufacturers, it will be seen, therefore, find the system of coalition beset with the same dangers which have so generally wrecked such attempts in this country. The next thing we may expect to hear of are accusations of bad faith on the part of members of the organization, and it is then that the system will be put to a crucial test.

The Citizens' Committee on the World's Fair of 1883, organized under the auspices of the United States Board of Trade, met at the Windsor Hotel last evening to hear reports on various subjects. This committee are in favor of Manhattan Island as the site.

## The Iron and Steel Trades' Convention.

### The Sessions of Tuesday at Pittsburgh.

The Convention of the Iron and Steel Manufacturing and Ore-mining Industries of the United States, called by the American Iron and Steel Association, assembled in the rooms of the Western Iron Association, 77 Fourth avenue, Pittsburgh, at 11 a. m., Tuesday, May 6th. The following gentlemen were present at the opening of proceedings:

James Cartwright, and W. H. McCurdy, of Cartwright, McCurdy & Co., Youngstown, Ohio.  
A. S. Crawford, New Castle, Pa.  
James Denniston, Hollidaysburg, Pa.  
Cyrus Elder, Johnstown, Pa.  
Thomas C. Keor, Pittsburgh.  
Calvin Wells, Pittsburgh.  
George S. Lewis, Portsmouth, Ohio.  
Charles A. Martin, Pittsburgh.  
Brown & Co., Pittsburgh.  
Willard Warner, Tecumseh, Ala.  
D. J. Morrell, Johnstown, Pa.  
H. S. Chamberlain, Chattanooga.  
David Thomas, Catsaqua, Pa.  
John Moorhead, Pittsburgh.  
J. D. Du Bois, Wheeling, W. Va.  
George D. Kelly, Sharpsville, Pa.  
Charles L. Caldwell, Pittsburgh.  
James Laughlin, Jr., Pittsburgh.  
Jos. D. Weeks, Pittsburgh.  
Samuel Martin, Michigan.  
James M. Swank, Philadelphia, Pa.  
Thomas Grogan, Boston.  
Robert G. Bushnell, Pittsburgh.  
S. L. Martin, Cleveland, Ohio.  
W. H. Cobb, Aurora, Ind.  
C. D. Hubbard, Wheeling, W. Va.  
A. B. Cornell, Youngstown, Ohio.  
Wm. Means, Cincinnati.  
Oliver Williams, Catsaqua, Pa.  
Percival Roberts, Philadelphia.  
J. B. Moorhead & Co., Philadelphia.  
John Stambaugh, Youngstown, Ohio.  
Samuel Laughlin, Wheeling, W. Va.  
S. H. Woodward, Wheeling, W. Va.  
J. C. Lewis, Portsmouth, Ohio.  
Percival Roberts, Jr., Philadelphia.  
C. Boggs, Clearfield, Pa.  
Cleveland Steel Works, Cleveland, Ohio.  
C. L. Fitzhugh, Pittsburgh.  
B. T. Jones, Pittsburgh.  
A. M. D. Bailey, Pittsburgh.  
Alex. Strausz, W. Va.  
Jos. Corus, Girard, Ohio.  
J. M. Kennedy, Philadelphia.  
J. M. Hartman, Philadelphia.  
Samuel Isett, Yellow Springs, Pa.  
J. M. Pullman, Philadelphia.  
C. A. Gooch & Co., Milton, Pa.  
Henry McCormick, Harrisburg, Pa.  
R. E. Blankenship, Richmond, Va.  
Alonso Loring, Wheeling, W. Va.  
Geo. Brooke, Birdsboro, Pa.  
A. W. Campbell, Wheeling, W. Va.  
S. C. Baker, Altoona, Pa.  
W. E. C. Cox, Reading, Pa.  
W. D. Wood, McKeesport, Pa.  
Chas. Douglass, Johnstown, Pa.  
Henry Wick, Youngstown, Pa.  
Hussey, Howe & Co., Pittsburgh.  
S. R. Schmucker, Williamsburg, Pa.  
M. Robbins, Niles, Ohio.  
A. S. Pattison, Harrisburg, Pa.  
J. C. Fuller, Philadelphia.  
J. K. McLaughlin, Hollidaysburg, Pa.  
Isabella Furnace Co., Pittsburgh.  
Spang, Chalfant & Co., Pittsburgh.  
Frank S. Witherbee, Port Henry, N. Y.  
H. M. Barry, New York.  
Nathaniel Ferguson, Berks County, Pa.  
C. E. Bingham, Cleveland, Ohio.  
Mumper & Co., Barre Forge, Pa.  
Alex. Laughlin, Wheeling, W. Va.  
J. J. Spearman, Sharon, Pa.  
O. W. Potter, Chicago.  
James F. Rhodes, Cleveland, Ohio.  
H. Lloyd, Jr., Pittsburgh.  
A. N. Childs, Pittsburgh.  
Francis Hinton, Chicago.  
F. Crowther, Newcastl., Pa.  
C. B. Herron, Pittsburgh.  
T. W. Kennedy, Struthers, Ohio.  
S. P. Burt, Detroit, Mich.  
W. C. Cronmeyer, Pittsburgh.  
Dr. C. G. Hussey, Pittsburgh.  
M. A. Hanna, Cleveland, Ohio.  
M. K. Moorhead, Pittsburgh.  
Benj. Fisher, Wheeling, W. Va.  
S. P. Bowen, Plattsburg, N. Y.  
W. P. Shinn, Pittsburgh.  
Reuben Miller, Pittsburgh.  
John S. Slagle, Pittsburgh.  
J. N. Vance, Wheeling, W. Va.  
A. F. Keating, Pittsburgh.

Mr. W. P. Shinn called the meeting to order, and nominated Mr. D. J. Morrell as permanent chairman. Mr. Morrell, on assuming the chair, named Mr. James M. Swank and Mr. J. D. Weeks as secretaries, and called on Mr. Swank to read the call, of which the following is the substance:

"In accordance with a resolution of the

Board of Managers of the American Iron and Steel Association, the undersigned requests all manufacturers of iron and steel, and all iron ore producers in the United States, to meet in convention at Pittsburgh, on Tuesday, the sixth day of May next, at 10 o'clock a. m., in the hall of the Western Iron Association and the Western Nail Association, to consider the present condition of our iron and steel industries—their wants and the dangers which threaten them. Many years have elapsed since a similar convention was held. It is believed that great good may result from more frequent conferences between representatives of such important industries, and the American Iron and Steel Association takes the initiative in promoting a full and free exchange of opinions by all iron and steel manufacturers and iron ore producers, whether members of the association or not."

Mr. Morrell then delivered the following

#### ADDRESS FROM THE CHAIR.

After a few introductory remarks on the importance and advantages of organization and association for the development of large industries, the president reviewed

#### THE HISTORY OF THE IRON AND STEEL ASSOCIATION.

The first general meeting of the iron trade of the United States of which there is any record, was called on the 6th day of December, 1849, to meet at Philadelphia on the 28th day of the same month, "to consider the existing depression in the iron industry, and to appeal to Congress for relief through a revision of the tariff." The meeting, which was held in the chamber of the Board of Trade, was largely attended by manufacturers and dealers in iron; after reading the reports of committees and appointing a general committee to further its purposes, it adjourned *sine die*. Its proceedings were published in book form, and were of interest and permanent value. For a period of more than five years no further movement of importance occurred, but the reasons for organization became constantly more urgent, and finally, on the 6th day of March, 1855, the American Iron Association was organized in Philadelphia. Hon. George N. Eckert, of Reading, Pa., was chosen president; Gen. James Irwin and John H. Towne, vice-presidents; Charles E. Smith, treasurer; and J. P. Lesley, secretary. The office of the association was established at Philadelphia, and a constitution was adopted.

The association thus organized continued in active existence until 1859, having a life of four years, during which time much valuable work was done by it. "The Iron Manufacturers' Guide to the Iron Works and Iron Ore Mines of the United States," compiled by the secretary, Professor J. P. Lesley, was a work of which the American iron trade stood in great need, and of which it had and still has just reason to be proud. It contained about 800 printed pages, and was published in 1859; but the American Iron Association appears to have died in giving it birth, as there is no record of any work being done by it after the annual meeting held on March 16 of that year. Thereafter, until 1864, the iron and steel manufacturers of the country appear to have been without a national organization for any purpose.

On the 10th day of October, 1864, a number of iron manufacturers from Pennsylvania, Ohio, Indiana, Illinois, Michigan, Kentucky, New Jersey, Missouri and Maryland met in Philadelphia and determined to invite the iron and steel makers of the United States to meet together for the purpose of considering a plan of organization, "whereby the whole American iron interest might be promoted, and each branch known and cared for." A letter of invitation was issued on the 1st day of November, calling a meeting on the 16th day of that month, at the Board of Trade rooms in Philadelphia, which assembled accordingly and organized the American Iron and Steel Association, which has ever since maintained a healthy and active existence, with a history of work done and results accomplished which is known to many of you and of which all have reaped the benefits. Captain Eber B. Ward, of Detroit, was chosen president of the meeting; William B. Ogden, of Chicago, vice-president; and E. Y. Townsend, of Philadelphia, and Thomas S. Blair, of Pittsburgh, secretaries. The meeting continued its deliberations through the day and evening, and on the morning of the 17th a constitution was adopted, the first article of which was a verbatim copy of the first article of the American Iron Association. The office of the association was established at Philadelphia, and a board of 30 managers was elected, which selected the following permanent officers of the association: President, Captain E. B. Ward; vice-presidents, Samuel J. Reeves, Abram S. Hewitt, James M. Cooper, Charles S. Wood and Joseph H. Scranton; treasurer, Charles Wheeler; and secretary, Robert H. Lamborn. Captain Ward remained president until 1869, when, at the annual meeting, on February 18, he declined a re-election, and was succeeded by the late and lamented president, Samuel J. Reeves. Captain Ward remained an active member and manager of the association until his death, which took place at his home on the 2d day of January, 1875, from an attack of apoplexy. He was born in Canada on Christmas, 1811, his parents being American citizens who had emigrated from Vermont. Mr. Reeves continued to be the president of the association from February 18, 1869, until December 15, 1878, when his long and honorable career as an American ironmaster was terminated by his death at his home in Phoenixville, Pa., caused by a pulmonary complaint.

After paying a graceful tribute to his predecessors in office, the president gave a brief review of the operations of the association, and then proceeded to give the following sketch of

#### THE PRESENT BUSINESS SITUATION.

In considering the present business situation, he presumed that they would agree with him in the opinion that the long-continued downward tendency of prices in their trade had been arrested, and that there are unmistakable indications, although as yet feeble, of a returning tide of business activity and prosperity. They might not anticipate rapid advances in prices or great gains in business operations, yet, if they

utilized the experience of the past five years, and advanced with firmness and caution, they might reasonably anticipate employment for all at living rates. The immense strain to which manufacturers have been subjected was shown by the fact that the shrinkage in the selling prices of iron and steel rails, which fairly represent the general trade in metals during the five years ending with 1878, had been as follows:

	Per cent.
1874 as compared with 1873.....	decline of 19.75
1875 " " 1874.....	" 21.40
1876 " " 1875.....	" 20.00
1877 " " 1876.....	" 20.75
1878 " " 1877.....	" 12.75

The actual discount from the average prices of 1873 to the average prices of 1878 is 64 17-100 per cent., or very nearly two-thirds off. The successive reductions since the panic have been harassing and depleting to all, and in cases where materials were held on credit they were absolutely ruinous. A vast amount of invested capital has been rendered of little value, or wholly lost, the apparent gains of the period of inflation having been swept away; and it is very certain that, taking the ten years just closed, in which we have seen the highest and lowest prices ever known in our trade, the average gains of iron and steel manufacturers have not exceeded simple interest on the capital invested.

The speaker then pointed to the confusion arising from the use of both the long and the short ton in business operations and statistical reports, and stated that it would be a relief if the business custom could be so modified that the ton of 2000 lbs. would only be recognized in all operations. He then passed to the important subject of

#### TRANSPORTATION.

the expense of which he claimed constitutes about one-third of the whole cost of the less advanced forms of iron and steel. In this respect he said our country is at a disadvantage as compared with other industrial nations which have a less extent of territory, in which raw materials are found in contiguity, or which have ocean and inland water transportation. The managers of our railroads have generally shown that they understand the importance of the traffic thrown upon their lines by manufacturing industries; but their rivalries for distant traffic and certain kinds of freights, which they compel each other to carry at losing rates, cast an additional burden upon local business, and often operate to the serious detriment of their most reliable customers. We, as manufacturers, are not so much wronged by the high freights we are compelled to pay as by the low rates given to importers and to the manufacturers of competing products, who are fortunate enough to be located at points affected by the rivalry of lines of transportation. It is doubtful if this system of railroad competition, which compels local traffic to pay for the losses incurred in a ruinous strife for what is called through business, can be much longer maintained; and it is certain that any change which will bring about equitable charges from and to all points will be as beneficial to the owners of railroad property as to the public at large.

Guarantees and tests of articles sold are questions of general interest, but may be more profitably considered in the several trade organizations represented in this association. It is very desirable that uniform guarantees shall be adopted which, without imposing unreasonable obligations, will insure a standard of good quality and workmanship to be respected by all manufacturers of similar products.

After referring in a few words to the purchase of English rails for the New York Central and Hudson River Railroad, a subject too recently discussed to need recapitulation, Mr. Morrell compared the present condition of American and English workmen, from personal observation, the result of which comparison, while it is highly favorable to our workmen, shows that as long as the present state of affairs continues abroad, manufacturers must be content with small profits, and workmen still practice thrift and economy. The next subject eloquently treated by the president was

#### THE PROTECTION POLICY.

He warned members against the machinations of foreign agents and their American allies to bring about a reduction of the present tariff, and urged the association to protest in an earnest and dignified manner against revision of the tariff; to demand the formation of a commission to ascertain the condition and wants of all our industries, and to request that Congress refrain from legislation until the presentation of the report of this commission, which, if it resulted in no other good, would at least obtain for the country what it most needs—a little rest.

Mr. Morrell's address was received with much favor and loudly applauded. It was followed by the reading of a communication from the Pittsburgh Board of Trade, tendering the convention the courtesies of their rooms and heartily welcoming the ironmasters to the city.

Mr. J. B. Moorhead moved that the venerable David Thomas, of Catsaqua, be made vice-president of the meeting, which was agreed to with much enthusiasm. Mr. Thomas made a few remarks in acknowledgment of the honor conferred upon him. Being urged to take a seat on the platform, he pleasantly remarked that he was not much of an object to look at, but that if the young men wanted to look at him, he certainly had no objection. Mr. Moorhead conducted Mr. Thomas to the platform amid great applause.

The Chair announced that Mr. Joseph Wharton had prepared, by request, a paper for presentation to the meeting, but, as he was unable to be present, he would ask Mr. Cyrus Elder to read it, which he did with great effect.

#### MR. JOSEPH WHARTON'S PAPER.

Talleyrand remarked that the United States resembled a giant without bones, and his simile had a certain aptness. This simile may very fitly be applied to the industries of this country as they would be without iron; all those vast activities, without an equally vast and active production and manufacture of iron and steel in the midst of them, would be but a boneless giant. Absolutely devoid of iron one cannot imagine

them; they would be simply impossible without the iron which is indispensable for their shelter, their motive power, their machinery and tools, their transportation in peace, and their defense in war. Dependent upon the iron of other countries, they would exist only by sufferance. Agriculture without iron falls back to the wooden ground-scraper pulled by an ox or cow fastened to it with thongs; to threshing of grain by trampling cattle and fanning it with a sieve in the wind; no plow nor hoe, no ax nor scythe, no horse-shoe, bridlebit nor wagon-tire, no thrashing machine nor grain mill.

Spinning and weaving, all making of cloth or string, reverts, without iron, from the swift whirring of countless spindles and looms in a modern factory, capable of making a girdle for the earth in 40 minutes, not merely to the domestic spinning-wheel and hand-loom, but to the distaff, and it vanishes into the dim antiquity when only skins were worn and clothing of any sort was a possession worthy of being reckoned as one of the chief spoils of war. Building without iron—no ax, hatchet, saw, plane, chisel, nor auger; no nail, screw, nor wire; no hinge, latch, nor lock—what is it but piling up of stones into a rude wall and covering it with boughs or skins, or merely propping up the skins or boughs upon poles? Travel or transportation without iron, other than afoot or upon the backs of animals, could not go beyond a wooden canoe for the water, and a clumsy springless wagon or chariot with block wheels for the land. Even hunting and fishing, and the ancient trade of murder or man-killing, were in a most deplorable condition without iron. Cain, having no pistol or other modern convenience, doubtless had no better way to kill his brother than with a stick. Tribes desiring to fight had to content themselves with stone hatchets or arrow-heads, and with clubs. If the dandy was right who said that existence without silver forks would be a burden to him, how distressing would be the life of a frontiersman without the revolver and bowie-knife which iron alone can afford him; how pitiable the lot of a nation without a Krupp cannon!

It might be supposed that the iron and steel producers, whose skill and toil bring to light the ores, extract the iron, make the steel, and fashion both iron and steel into all shapes of use; who, for the better supplying of mankind, draw into their service all science and art, and who render possible all other arts, would be highly, perhaps unduly, esteemed and revered by their fellow men, but candor compels me to state that, in this country at least, certain of their fellow citizens are fond of abusing them as monopolists, as rich aristocrats, and as defrauders (with the connivance of the State) of the public, their customers.

Mr. Wharton refuted the idea that American ironmasters are monopolists and aristocrats, and met the reproach that they are rich by the statement that only rich men can stand being in the iron trade, and that their solid capital was the only stay of such establishments as had survived. He warned American manufacturers against entering into any "Siamese-twins arrangements" with Great Britain, and urged a continuance of the policy of protection as the only efficient barrier to guard "the industrial independence of the nation and the self-respecting manhood of American laborers against the assaults of the cheaper labor of foreign lands, directed and sustained by the accumulated skill and the cheaper capital of those lands."

Mr. Wharton received a vote of thanks for his able paper.

#### MR. A. B. STONE'S PAPER.

My endeavor in this paper will be to show briefly the close relations existing between the iron and steel manufactures of the United States, and all the other branches of our industrial system, insisting more particularly on their relations to the farming interests of the West and Southwest, and indicating summarily how, by fostering and promoting such manufactures, the nation is fostering and promoting the agricultural concerns of those great and growing sections of the country.

One of the fallacies connected with and underlying the ordinary free-trade argument is that, if tariffs did not exist, the consumer would obtain his commodities at a lower rate than he obtains them under protection. A great deal of eloquence is wasted in knocking down this man of straw. To begin with, economists need not be told that competition results in lowering prices. It is plain that a protective tariff, instead of rooting out competition, actually creates it. The iron and steel producers of England are well aware that our protective tariff has produced competition, from which they are to-day suffering. It would be strange indeed if this competition resulted in raising prices. We have at hand the most overwhelming proof that it has not, but that it has resulted in a reduction of prices. Let us glance at a few facts, which will outweigh thousands of theories. In October, 1877, iron rails fell to \$32.50 per ton. This is far below the lowest price of rails in this country when the tariff was merely nominal. In 1852, during a previous era of low prices, best refined bar iron was sold at Philadelphia at an average price during the year of \$58.79 per gross ton. In 1877 the average price of the same quality of iron was \$45.55 per gross ton. The lowest price obtained in 1852, was from March to July, \$52.50 per ton. In August the price ran up to \$55; in September to \$60; in October and November it stood at \$70; and in December it rose to \$80. And during the first three months of 1853 the price remained at \$90 per ton. This was under a nominal tariff; we had no manufactures to speak of; we were then following the free trader's advice, and hence, according to his logic, ought to have been getting our iron and steel cheap. Twenty-five years afterward, in 1877, after a long trial of protection, the bar iron that was \$90 a ton in 1853, was sold month after month for \$44.80—less than one-half the price in 1853. This was \$7.70 below the lowest figure touched in 1852. And the present low figures are in a

[Continued on page 22.]







# Trade Report.

Office of The Iron Age,  
Wednesday Evening, May 7, 1879.

The present week, like the past one, has been uneventful in financial circles. The market for sterling bills is unchanged; 3 per cent. is the ruling rate at the Stock Exchange when the collateral consists of ordinary securities. Prime mercantile paper is 4 @ 5 per cent. On United States bonds, as securities, 1½ @ 2½ per cent. is the quotation. Time loans are 1½ @ 2½ per cent.

United States bonds are without change. The business in the 4 per cents., at 102½, continues to be very large at the offices of the leading dealers.

Railroad investments, bonds and shares continue very strong. Speculative bonds are higher for the Erie issues and Rome and Watertown firsts. The most active stocks have been Northwest, Lake Shore, Erie and St. Paul. The largest transactions were in the Erie Second New Consolidated. Toward the close the general stock market declined ¼ @ ½ per cent., the latter Western Union Telegraph.

The bank return shows an increase of \$2,049,725 in surplus reserve, which now stands at \$14,373,775, against \$16,718,700 at this time last year, and \$16,821,550 at the corresponding period in 1877. The loans show an increase this week of \$8,260,900; the specie is up \$283,100; the legal tenders are augmented \$4,216,000; the deposits other than United States are up \$9,817,500, and the circulation is decreased \$24,500.

The following is an analysis of the bank totals of this week compared with that of last week:

	April 26.	May 3.	Comparisons.
Loans.....	\$21,006,900	\$29,337,800	Inc. \$8,260,900
Specie.....	18,228,100	18,511,200	Inc. 283,100
Legal tenders	25,224,500	40,440,500	Dec. 15,216,000
Total reserve	64,459,500	88,290,000	Inc. 23,830,500
Deposits.....	204,514,200	214,331,700	Inc. 9,817,500
Reserve re-quired.....	51,228,550	53,589,925	Inc. 2,361,375
Surplus.....	13,224,350	14,373,775	Inc. 1,149,425
Circulation.....	19,707,600	19,683,100	Dec. 24,500

The foreign trade movements at the port of New York since our last issue are shown in the following tables:

For the week ended May 3:

	1877.	1878.	1879.
Dry goods.....	\$1,261,231	\$1,182,044	\$1,250,091
General mds.....	4,924,994	4,133,399	4,975,766
Total for week.....	\$6,186,225	\$5,315,443	\$6,225,857
Prev. reported.....	110,271,108	96,984,063	100,836,431

Since Jan. 1.....\$116,460,203 \$102,301,236 \$109,065,208

Included in the imports were articles of merchandise valued as follows:

	Quantity.	Value.
Amvils.....	800	\$2,406
Brass goods.....	11	1,994
Bronzes.....	5	1,100
Copper.....	106	106
Cutlery.....	55	18,230
Guns.....	2	4,140
Hardware.....	6	926
Iron, pig, tons.....	120	1,227
Iron, sheet, tons.....	15	2,494
Iron ore, tons.....	3,915	9,569
Iron, other, tons.....	1,062	43,435
Metal goods.....	103	15,264
Nails.....	101	101
No. 100.....	1	683
Plated ware.....	1	97
Perforated caps.....	2	525
Saddlery.....	4	619
Steel.....	12,755	12,755
Spelter.....	55,322	1,800
Silver ore.....	42	2,887
Tin, boxes.....	34	156,916
Tin, 1,500 slabs.....	19	19,844
Wine.....	39	3,384

For week ended May 6:

	1877.	1878.	1879.
For the week.....	\$5,935,723	\$6,830,097	\$6,080,721
Prev. reported.....	86,306,005	113,509,935	101,137,179

Since Jan. 1.....\$92,321,728 \$120,333,912 \$109,117,913

For the week ended May 3:

	1877.	1878.	1879.
Total for the week.....	\$243,750	\$243,750	\$243,750
Previously reported.....	6,133,399	6,133,399	6,133,399

Total since January 1, 1879.....\$6,856,782

Government bonds were strong and closed at the following quotations. The feature continues to be the 4 per cents., which advanced ½:

	Bid.	Asked.
U. S. 4's 1881 registered.....	102½	103½
U. S. 4's 1881 coupon.....	102½	103½
U. S. 4's 1881 registered.....	102½	103½
U. S. 4's 1881 coupon.....	102½	103½
U. S. 4's 1881 registered.....	102½	103½
U. S. 4's 1881 coupon.....	102½	103½
U. S. 4's 1881 registered.....	102½	103½
U. S. 4's 1881 coupon.....	102½	103½

The following were the closing quotations of active shares:

	Bid.	Asked.
Albany and Susquehanna.....	88½	90
Alton and Terre Haute.....	10½	11
Atlantic and Pacific Telegraph.....	33½	34
Boston Air Line.....	19	20
Burlington and Quincy.....	21¼	21½
Canada Southern.....	61	61½
Clerk, Col. Cin. and Indianapolis.....	47½	48
Cleveland and Pittsburgh.....	82½	83
Chicago and Alton.....	109	110
Chicago, St. Paul and Minn.....	3¼	3½
Delaware, Lack. and Western.....	54½	55
Delaware and Hudson Canal.....	47½	48
Express-Adams.....	108½	109
" American.....	47½	48
" United States.....	47½	48
" Wells, Fargo & Co.....	47½	48
Erie.....	28½	29
" Pref.....	52	53
Fort Wayne.....	108½	109
Hartford.....	108½	109
Hannibal and St. Joseph.....	19½	20
Illinois Central.....	43½	44
Kansas Pacific.....	57½	58
Kansas and Texas.....	33½	34
Lake Shore.....	74½	75
Louisville and Nashville.....	63	63½
Michigan Central.....	83½	84
Morris and Essex.....	93½	94
New York Central.....	118½	119
" Elevated.....	183½	184
New Jersey Central.....	44½	45
Northwestern.....	61½	62
" Pref.....	93	93½
Ohio and Mississippi.....	14½	15
" Pref.....	37½	38

Pacific Mail.....	14½	15
Panama.....	14½	15
Quicksilver.....	14½	15
" Preferred.....	14½	15
Rock Island and Pacific.....	13½	14
St. Louis and Iron Mountain.....	26½	27
St. Louis Kansas City Northern.....	15½	16
St. Louis and San Francisco.....	4½	5
St. Paul.....	11	12
" Pref.....	44½	45
Standard.....	31½	32
Sutro Tunnel.....	45½	46
Union Pacific.....	74	75
Webb.....	30½	31
Western Union Telegraph.....	103½	104

## GENERAL HARDWARE.

Business is in much the same condition as at our last writing, and few complaints of any falling off in the demand are heard. As regards values the tone of the market is steady, and evidences are not wanting of a tendency on the part of manufacturers, in many lines of goods, looking for more remunerative prices than those that ruled in the early part of the season.

In foreign hardware, business is not quite as active as it was in April, still the general report is that there is a great deal more doing than was the case at this season in several years.

We have pleasure in printing the following announcement of the screw manufacturers to the hardware trade:

NEW YORK, May 6, 1879.

To the Hardware Trade.—GENTLEMEN: It has been resolved, by agreement among ourselves, to reduce our mills to half time for a period following the 1st of June next. The effect of this action will be to reduce our present stocks and avoid excessive competition among us and in the trade. At the suggestion of representative members of the trade, we have also agreed to decline to continue to supply any parties who shall undersell our published rates, inasmuch as only through a reduction of our products, and by an effort on the part of the dealers to maintain prices, can a positive disaster to the manufacturers be avoided, and any opportunity whatever afforded the trade for securing a fair profit in compensation for their labor in distribution.

UNION STEEL SCREW CO.  
AMERICAN SCREW CO.  
RUSSELL & ERWIN MFG. CO.  
MASSACHUSETTS SCREW CO.  
UNITED STATES SCREW CO.

This announcement is the result of an extended trip of the principal screw manufacturers to visit the trade of the chief cities of the country, and is in accordance with the views expressed to them by the trade. As the manufacturers are acting in entire harmony and co-operation in adopting this course, the effect upon the trade, both jobbers and retailers, must be beneficial as it will settle prices and prevent "cutting." This action gives an assurance to holders of stocks of screws laid in at lower prices than can now be had, that they cannot replace them at prices which will enable them to shade present rates, and good policy would seem to require that they should make the most of the advances they are now able to realize—apart from the fact that the manufacturers have undertaken to withhold goods from dealers underselling regular quotations.

The Russell & Erwin Mfg. Co. are just receiving their new and complete catalogue, volume 5, embracing all the goods of their manufacture, also all the general goods to be found in their stock. The volume consists of nearly 800 large pages, got up in attractive style; nearly every article is handsomely illustrated, a large proportion of the cuts being full size. The plan has been to arrange everything compactly, economizing room, but in no case curtailing full descriptions and illustrations. The pages are large, and the various classes of goods are, as far as possible, grouped and shown on pages facing each other, greatly promoting convenience of reference. The first part of the book is devoted to Locks and Bronze goods, with full size illustrations, the arrangement of which will commend itself to the trade, the classes being shown in distinct groups. Many of their Front Door and Vestibule Locks are shown with their patent anti-friction "R" Latch, a most valuable device, preventing all difficulty and jar in shutting doors. The illustrations of Bronze goods are very striking, showing their magnificent line, which of late has been largely increased, and including a number of new designs, made with special reference to the artistic styles of woodwork now in vogue. In Padlocks the assortment shown is very large, comprising, besides the regular goods, many new shapes and styles, a number of these being furnished with their Nickel-plated Flat Steel Keys. One page of the book is devoted to key similes of their Screw Labels, printed in colors, which is followed by full size cuts of the various sizes of Wood Screws. Cabinet and Trunk Locks are shown in extensive variety and actual size. Trunk Locks being presented in natural color. Great care has been taken in the presentation of miscellaneous goods, which are arranged in classes on pages facing each other, thus aiding comparison. In Henry Disston & Sons' Saws, for example, Mill and Cross Cuts are shown on pages 604 and 605, presenting a whole line at one view, and this arrangement is followed as closely as possible throughout, making it very convenient for reference. Russell & Erwin Mfg. Co. desire to place this book as soon as possible in the hands of their customers. As it is too large to go by mail, it will be packed with the first goods shipped.

We hear of a fair amount of Nails going into consumption, and although sales are not as heavy as they were early in April, still the aggregate of the week's business is considerable. The tone of the market is firm, and we do not hear of any shading of prices. We continue to quote 10d. to 60d. \$2.25 net.

We invite attention to the advertisement of Boyd & Chase, of this city, in which they quote their Washita Stone at 15 cents per lb. for No. 1, and 12½ cents per lb. for No. 2. The advertisement is among Special Notices, on the opposite page.

W. & B. Douglas, Middletown, Conn., have issued a revised and enlarged edition of their illustrated catalogue and price list, in which they show their large assortment of Patent Pumps, Hydraulic Rams, Chain Pumps, Garden Engines and other hydraulic machines, Grindstone Trimmings, Barn-Door Rollers, Hangers and Rail, and kindred goods. Introducing their book they say: "Herewith we have the pleasure of presenting to our numerous friends and customers in the four quarters of the globe (if not in their mother tongue, in the cuts, which speak every language), a descriptive catalogue and price list of the leading articles of our manufacture, comprising some of the most valuable improvements of the age, the product of long experience, talent and skill devoted to the business, with large investment in machinery and every facility combined to keep up the standard of our goods, both in quality, style and utility." The book, which is tastefully arranged and handsomely printed and bound, contains 248 pages, and is furnished with a very comprehensive index. Many valuable Pumps and other hydraulic machines are shown in addition to those contained in their former catalogue. The works of W. & B. Douglas were founded in 1832. They have a branch warehouse in this city at Nos. 85 and 87 John street, and in Chicago, Ill., at No. 197 Lake street.

Harvey W. Peace, proprietor of the Vulcan Saw Works, Brooklyn, E. D., has issued an illustrated catalogue and price list, showing, in addition to a large assortment of Hand, Panel, Rip, Back, Compass, Butcher and Pruning Saws, a good line of Cross-Cut and Mill, Circular, Pit, Gang and Drag Saws, &c. Illustrations are also presented of five styles of Framed Wood Saws, Billet, Felloe and Turning Webs, &c. The following discount sheet accompanies the book: Vulcan Saw Works, 10th and Ainslie Streets, Brooklyn, E. D., N. Y.

	Per Cent.
Circular Saws.....	10
Circular Top and Shingle Saws.....	10
Circular Resawing Saws.....	10
Wire Gauges.....	10
Concave Circular Saws.....	10
Saw Mandrels.....	10
Mulley and Drag Saws.....	10
Mill and Gang Saws.....	10
Fay's Scroll Saws.....	10
Ice Saws.....	10
Cross-Cut Saws.....	10
Cross-Cut Saw Handles.....	10
Turning and Felloe Webs.....	10
Butcher Saws.....	10
Hand Saws.....	10
Back Saws.....	10
Miter-Box Saws.....	10
Segment Saws.....	10
Fret Saw Blades.....	10
Currier Blades.....	10
Kitchen Saws.....	10
Butcher Saws.....	10
Saw Sels.....	10
Pruning Saws.....	10
Butcher Blades.....	10
Buck Saw Blades.....	10
Lath Webs.....	10
Wood Saws.....	10
Saw Rods.....	10
Saw Frames.....	10
Flushing Tools.....	10
Hand Saws.....	10
Cabinet Scrapers.....	10
Saw Screws.....	10
Saw Handles.....	10
Saw Sels.....	10
Band Saws.....	10

On the 2d inst. the following revised prices for Manila and Sisal Cordage, showing one-half a cent per pound advance over previous quotations, were adopted by the manufacturers. This price list is subject to the usual trade discount.

	1877.	1878.	1879.
Manila Cordage, sizes above 12 1/2 d and Hay and Hide Ropes.....	11½	12½	13½
Manila Cordage, 12 1/2 d (¾ in. diam.).....	12½	13½	14½
" 12 1/2 d (¾ in. diam.).....	12½	13½	14½
Manila Cordage, 12 1/2 d (¾ in. diam.).....	12½	13½	14½
" 12 1/2 d (¾ in. diam.).....	12½	13½	14½
" 12 1/2 d (¾ in. diam.).....	12½	13½	14½
" 12 1/2 d (¾ in. diam.).....	12½	13½	14½
" 12 1/2 d (¾ in. diam.).....	12½	13½	14½
" 12 1/2 d (¾ in. diam.).....	12½	13½	14½

The Reading Hardware Company, Reading, Pa., and 81 Reade street, New York, have in press the following circular:

NEW YORK, May 1, 1879.

Our agreement with Messrs. Fernald & Sise having expired, we have withdrawn the agency of our goods from them and opened a store at 81 Reade and 97 Chambers streets, where we will carry a full line of our goods, including Locks, Butts, Tea and Counter Scales; also, Hot-Air Registers and Ventilators, which we have recently added to our line.

Soliciting your orders, we remain respectfully yours,

READING HARDWARE COMPANY.  
Charles F. Gayton is in charge of the New York store and J. A. Bronson, late with the Hart, Bliven & Mead Manufacturing Company, is also engaged by the company.

Sterling & Herrick, Nos. 7 and 9 Cliff street, have been appointed sole agents for the Paxton Rolling Mills, of Harrisburg, Pa., manufacturers of Boiler Plate and Tank Iron; they have also taken the agency of the Saranac Horse Nail Company, and will carry in stock a full assortment of their goods.

Joseph Byrne & Co., importers and dealers in Tin Plate and Metals, have removed to No. 86 Beekman, near Cliff street.

Nahm Stetson, Jr., No. 73 Pearl street, has been appointed agent for the Bridge-water Iron Company, and has issued a cir-

cular under date of 1st instant, inviting the attention of the trade to their facilities for supplying at short notice Brass and Copper Seamless Drawn Tubes. A large assortment of these Tubes can be seen at their office above named.

We have received the following circular:

NEW YORK, May 1, 1879.

DEAR SIR: We beg to inform you that we have given up the agency of the Western File Company, and from this date shall cease to sell their Files. In the future we shall represent the New American File Company. We shall carry a full and well-assorted stock of their Files, and fill all orders promptly at factory prices.

Thanking you for your past favors, we solicit your future patronage for the American File, with the full assurance that they are equal to any File made. Prices furnished upon application. Yours truly,

WIEBUSH & HILGER HARDWARE CO.

Our attention has been called to a typographical error which occurred in a notice of The Providence Tool Co.'s Patent Anti-Friction Hoisting Block in our issue of April 24, which read: "For hoisting heavy goods where no steam or horse power is used." It should have read: "For hoisting heavy goods where steam or horse power is used."

The Ansonia Brass and Copper Co., 19 Cliff street, have issued a circular, from which we extract the following:

"We are now prepared to furnish O'Neil's Patent Nickel Plated Sheet Copper and Sheet Brass, which is admirably adapted to the various purposes of ornamentation when a bright, smooth and rich surface is required. The plating is done while the Sheet Metal is clean and fresh from the rolls, and before any change has taken place on the surface of the sheets to prevent a thorough amalgamation of the plating with the Sheet Metal, consequently it does not tarnish or discolor on exposure to ordinary degrees of heat or atmospheric changes. It may be subjected to the most severe tests, and will form a double seam without injury to the metal or plating, and may be soldered same as Tinned Copper."

We invite attention to the advertisement of S. C. Anderson, which appears among Special Notices on the opposite page. Mr. Anderson is desirous of representing manufacturers of Hardware specialties, Iron, Steel, &c.

We have received the following notice and circular, from which it will be seen that Edward Frith, so long known to the trade as the representative of Sanderson Brothers & Co.'s Steel, has severed his connection with that company, and will in future represent the product of Benjamin Atha & Co., proprietors of the Newark Steel Works. The Cast Steel manufactured by Benjamin Atha & Co. has attained a very high reputation, the materials used being, we are informed, Swedish Iron of the best quality. All orders sent to the care of Edward Frith & Son, No. 241 Pearl street, will be filled at best factory rates.

NEW YORK, May 1, 1879.

NOTICE.—The partnership heretofore existing under the firm name of Frith & Tilton is this day dissolved by mutual consent.

EDWARD FRITH.  
WILLIAM TILTON.

NEW YORK, May 1, 1879.

COPARTNERSHIP NOTICE.—The undersigned have formed a copartnership under the firm name of Edward Frith & Son, for the transaction of a commission business.

EDWARD FRITH.  
LOUIS EDWARD FRITH.

NEWARK STEEL WORKS,  
NEWARK, N. J., May 1, 1879.

DEAR SIR: For the sale of our Steel, from this date, our firm will be further represented by Messrs. Edward Frith & Son, 241 Pearl street, New York. For more than 20 years Mr. Edward Frith has had the practical management of Messrs. Sanderson Bros. & Co.'s business in the United States and Canada. He is consequently familiar with the various demands of the steel trade, and his long experience enables him to correctly interpret any special orders for us which you may be willing to intrust to him.

We are of course extremely gratified to be able to report that our efforts to make decidedly first-class Cast Steel have been rewarded by repeated and daily increasing demands. It is highly valued for tools, is extensively used at some of the largest machine shops in the country, and is unsurpassed in its adaptation for granite-rock drills and mining purposes.

We intend to maintain the high standard of excellence, uniform quality and temper, which we have attained. Our very best attention is given to the production of smooth-surfaced and perfectly true round Machinery Steel, Die Steel, Steel for all kinds of agricultural implements, for files, skates, carriage springs, tires, sleigh shoes, and for all special purposes.

We quote lowest prices consistent with the employment of the best suitable materials, carefully treated in the manufacture, and we earnestly request the favor of a trial of our Steel by those who are not as yet our correspondents.

Assuring you of our careful regard for your interest we are respectfully yours,  
BENJAMIN ATHA & CO.

IRON.

American Pig.—The market is firm, with a fair consumptive demand. We hear of sales of 1200 tons Thomas Iron Co.'s No. 1 and 2 X at \$18.50 and \$17. For prime Lehigh Irons the inquiry for prompt delivery continues in the active condition so frequently noticed, but, as the companies decline orders for future delivery, based on current rates, the sales are in consequence restricted. In addition to the above-mentioned sales, there have been the usual dealings in small lots, which will aggregate several hundred tons. We quote: Foundry

No. 1, \$18 @ \$19; Foundry No. 2, \$17 @ \$18, and Gray Forge, \$16.50.

Scotch Pig.—The trade remains confined to small lots, and no arrivals have come to our notice during the week. We quote: Eglinton, \$19.50 @ \$20; and Coltness, \$22.

Rails.—The Rail market is not quite so active this week, owing, in a great measure, to the difficulty in placing orders for delivery earlier than November. We hear of the sale of 1000 tons Steel Rails to Mr. Vanderbilt, by the Lackawanna Coal and Iron Company, of Scranton, Pa., making 8000 tons of this company's Rails purchased by him this season. This would seem to show that whatever may have been Mr. Vanderbilt's reason for his celebrated purchase of English Rails, it was not because he could not find Steel Rails to suit him in this country. In addition to the above sale is reported of 1500 tons Steel at \$45 here. In Iron Rails no transactions have come to light. We quote Steel at tide-water, \$45 and Iron Rails at mill, \$35 @ \$36.

Old Rails.—We hear of the sale of 2000 tons Old Rails at \$21, Albany delivery. We quote \$20 @ \$21 here.

Scrap.—There is considerable activity in Scrap Iron, and a sale of 300 tons at \$22.50 is reported, also a re-sale of 500 tons on terms which have not transpired. We quote No. 1 Wrought from yard, \$23 @ \$24.

METALS.

Copper.—The market for Lake Superior Copper has been very quiet, and sales have been limited to 100,000 pounds at 16½, which is the closing figure. Baltimore is worth about as much. Telegraphic news has been received from the West Coast, according to which the Chilean fleet has returned to the Copper ports; for the time being there is, consequently, no apprehension that Copper may be prevented from leaving them, and this sufficiently explains the sudden apathy which seems to have seized upon the Copper market in England, whence no changes are wired. Mail advices have reached us from London as late as April 26. We clip therefrom the following passage:



We quote manufacturers at New York: Bar, 4 1/2¢; Pipe, 4 1/2¢; Sheet, 5 1/2¢; Tin-Lined Pipe, 12¢; No. 1 folder, 10¢; all less 10¢ to the trade.

**Spelter and Zinc.**—The market for Domestic Spelter is very quiet. Small sales of good Spelter have been effected at 4 1/2¢. We quote at the close, nominally, 4 1/2¢ @ 4 1/2¢, accordingly to size of lots and to brands. London, April 26, reports as follows: "This market remains in a very unsatisfactory condition, and prices of English hard are rather weaker." We quote at New York: Sheet Zinc, 6 1/2¢; Refined Spelter, 8¢ @ 8 1/2¢; Silesian, nominally, 5 1/2¢ @ 5 1/2¢, and Berganport, from Lehigh ore, 9¢.

**Nickel.**—Is unaltered at \$1.25.

**Antimony.**—A moderate demand prevails and is filled at 11 1/2¢ @ 12¢, according to brand.

#### OLD METALS, PAPER STOCK, &c.

The Old Metal market continues as flat as ever. Brass, Copper and Zinc hold their own, however, and Old Iron is in active demand. The price of Lead has fallen 1/2¢ since our last report. The Rag and Paper stock market continues very dull. There is absolutely no demand for Seconds.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy.....	per lb. \$0.12 1/2 @
Copper Bottoms.....	" " " "
Yellow Metal.....	" " " "
Brass, heavy.....	" " " "
Brass, light.....	" " " "
Composition, heavy.....	" " " "
Lead, solid.....	" " " "
Tea Lead.....	" " " "
Zinc.....	" " " "
Pewter, No. 1.....	" " " "
Pewter, No. 2.....	" " " "
Wrought Iron.....	prton \$17.50 @
Light ".....	" " " "
Stove Plate.....	" " " "
Machinery do.....	" " " "
Grass Bark.....	" " " "

The prices current for Rags, &c., are as follows:

Canvas, Linen.....	per lb. 3 c. @ 3 1/2 c.
White Cotton, New.....	" " " "
White, No. 1.....	" " " "
White, No. 2.....	" " " "
Seconds.....	" " " "
Mixed, Woolen.....	" " " "
Mixed, do.....	" " " "
Mixed Rags.....	" " " "
Woolen, No. 1.....	" " " "
Woolen, No. 2.....	" " " "
Woolen, No. 3.....	" " " "
Woolen, No. 4.....	" " " "
Woolen, No. 5.....	" " " "
Woolen, No. 6.....	" " " "
Woolen, No. 7.....	" " " "
Woolen, No. 8.....	" " " "
Woolen, No. 9.....	" " " "
Woolen, No. 10.....	" " " "
Woolen, No. 11.....	" " " "
Woolen, No. 12.....	" " " "
Woolen, No. 13.....	" " " "
Woolen, No. 14.....	" " " "
Woolen, No. 15.....	" " " "
Woolen, No. 16.....	" " " "
Woolen, No. 17.....	" " " "
Woolen, No. 18.....	" " " "
Woolen, No. 19.....	" " " "
Woolen, No. 20.....	" " " "

#### IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending May 6, 1879:

Hardware.	Iron.
Baldwin Bros. & Co., Mdse., pkgs., 12	Brown Bros. Wire rods, coils, 481
Barbour Bros., Machin., 77, 63	Conroy D. J., Flues, 138
Benner & Finckley, Steel wire, csk., 1	Degener R. & D. C. & Co., Cdr. iron, pkgs., 60
Berbeck & J. & Co., Hdw., csk., 1	Henderson Bros., Pig, tons, 100
Blount & Co., Mdse., pkgs., 13	Johnson Lawrence, Lub. oil, bbls., 27
Boké-Herman & Co., Hdw., csk., 12	Marvel Wm. D., Quantity iron ore
Eddy Geo. M., Mdse., pkgs., 11	Mendendez José, Rails, 48
Erle Railway Co., Mdse., pkgs., 1	Merchants' Dispatch Co., Cast-iron, pkgs. of machinery, 4
Folsom H. & D., Guns, cs., 12	Naylor & Co., Bundles, 48
Friedman & Lauterjung, Mdse., pkgs., 3	Harmer, Hays & Co., Hdw., cs., 1
Hecht Bros., Mdse., pkgs., 3	Owen T. J. & Co., Old iron car wheels, pairs, 2
Hermann H. & Co., Hdw., csk., 12	Old castings, box, 1
Hildrick A. H., Anvils, 65	Perkins, Livingston & Co., Post, 300,000
Hopkins E. T., Mdse., pkgs., 6	Spiegel, kilogs., 1
Howard, Sanger & Co., Mdse., pkgs., 3	Phillips J. L., Scrap, tons, 298
Krauss & Kahn, Grindstones, csk., 70	Prosser T. & Sons, Tubes, bbls., 14
Grindstones, pkgs., 15	Order
Livingstone W. & F., Grindstones, 84	Order
Levin Bros. & Co., Mdse., pkgs., 3	Order
Mathews John, Machinery, box, 1	Order
McCoys & Co., Mdse., pkgs., 4	Order
Merchants' Dispatch Co., Hdw., cs., 1	Order
Montgomery J. M., Hdw., pkgs., 8	Order
Moore's J. P. Sons, Gun wads, cs., 1	Order
Cartridge cases, cs., 1	Order
Morris L. W., Hdw., cs., 1	Order
Mullholland & Hilcox, Machinery, cs., 1	Order
Pallard M. J. & Co., Ironware, cs., 2	Order
Prosser Thos. & Sons, Mdse., pkgs., 45	Order
Rant Richard, Steel wire, csk., 1	Order
Rogers H., Mdse., pkgs., 4	Order
Sawyer J. J., Wire rope, coil, 1	Order
Schuyler, Hartley & Graham, Guns, cs., 4	Order
Strasburger, Pfeiffer & Co., Hdw., cs., 1	Order
Taylor Thos., Cutlery, cs., 1	Order
Thompson C. W., Bundles, 506	Order
Trow's Printing Co., Machinery, cs., 2	Order
Von Cleff & Co., Mdse., pkgs., 6	Order
Wiebusch & Hilger Hdw. Co., Cutlery and hdw., pkgs., 7	Order
Wolf S. N. & Co., Mdse., pkgs., 23	Order
Woodruff A. J., Mdse., pkgs., 4	Order
Order	Order
Chains, csk., 1	Order
Coal, tons, 192	Order
Hdw., cs., 3	Order
Hdw., cs., 3	Order
Porous caps, cs., 6	Order
Shackles, "cs., 2	Order
Telegraph wire, cs., 9	Order
Wads, cs., 1	Order

#### EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending May 6, 1879:

Dutch East Indies.	Quant. Value	French West Indies.	Quant. Value
Quin. V'lue.		Nails, kegs.....	80 \$300
Pt'm, gals. 66,450 \$116,999		Pt'd ware, cs. 8	700
Dutch West Indies.		Wringers, cs. 3	153
Nails, kegs.....	73 35	Pumps, pkgs. 55	3,897
Hdw., cs.....	40 595	Nails, cs.....	170 1,580
Glassware, cs. 85	497	Guns, cs.....	105 946
Per caps, cs. 2	51	Mf. iron, pkgs. 105	946
Mf. iron, pkgs. 30	274	Sew. machs, cs. 3	243
Pt'm, gals. 6144	715	French West Indies.	
Twine, cs. 2	110	Pt'm, gals. 3,000	350
Nails, bogs. 15	82	Pt'd ware, cs. 2	85
Pt'd ware, cs. 4	148	Cuba.	
Revolvers, cs. 1	150	Hdw., cs.....	305 4,402
Copenhagen.		Mach'y, cases, 52	2,200
Galv. battery, 1	80	Coal, tons, 1501	4,335
Mach'y, cs.....	6 500	Lead, pkgs. 28	435
Silv. ware, cs. 1	4,000	States, cs.....	4 100
Antwerp.		Pt'd ware, cs. 13	940
Pt'm, gals. 305,000 25,600		Ag. imp. pkgs. 50	123
Hamburg.		Hdw., cs.....	305 4,402
Pt'm, gals. 414,607 41,481		Sew. machs, cs. 1	45
Cutlery, cs. 3	592	Twine, cs. 2	110
Copper, cks. 18	3,375	Pt'm, gals. 44,730	4,728
Glassware, cs. 11	290	Pumps, pkgs. 74	2,935
Mach'y, cs. 103	10,806	Mf. iron, pkgs. 14	120
States, cs. 31	135	Nails, bogs. 15	82
Manganese, cs. 78	500	Nails, kegs. 250	450
Lub. oil, gals. 3,624	444	Haere.	
Belting, boxes 4	1,200	Copper, cks. 344	57,000
Twine, cs. 2	110	Mach'y, cs. 12	1,210
Tacks, bxs. 103	3,738	Silver ware, cs. 2	2,500
Ag. imp. pkgs. 271	5,489	Sew. machs, cs. 510	11,187
Mf. iron, pkgs. 306	1,675	Pt'm, gals. 292,222	33,500
Sew. machs, cs. 3	105	Bellies, lbs. 64,950	3,070
Twine, cs. 2	110	Ag. imp. pkgs. 250	14,008
Silverware, cs. 9	331	Hdw., cs.....	6 200
States, pcs. 80,129	2,721	S'p'd ware, cs. 17	970
Cartridges, cs. 3	487	Marine.	
Arrendal.		Coal, tons, 30	150
Pt'm, gals. 116,945 10,531		Pt'm, gals. 10,978	10,680
Stettin.		Pt'm, gals. 183,265	16,510
Pt'm, gals. 194,133 18,500		Dunkirk.	
Lubeck.		Hdw., cs.....	5 90
Pt'm, gals. 113,454 11,160		Ag. imp. pkgs. 6	247
Bremen.		Hdw., cs.....	3,500 393
Sew. machs, cs. 100	2,440	Nails, kegs. 34	98
Mach'y, cs. 9	665	Hutten.	
States, pcs. 79	375	Pt'm, gals. 1,000	119
Pumps, pkgs. 2	81	China.	
Pt'm, gals. 818,882 67,923		Hdw., cs.....	3 140
Carbon, bk. bbls. 45	100	Pumps, pkgs. 3	181
Ag. imp. pkgs. 924	9,627	Pt'd ware, cs. 2	176
Handspikes, cs. 500	180	Trieste.	
Cronstadt.		Pt'm, gals. 610,404	60,007
Pt'm, gals. 156,416 14,860		United States of Columbia.	
Rotterdam.		Pt'm, gals. 5180	900
Lub. oil, bbls. 300	3,464	Sew. machs, cs. 47	1,322
Mf. iron, pkgs. 45	364	Twine, cs. 2	110
Pt'm, gals. 60	8	Mf. iron, pkgs. 150	600
Ag. imp. pkgs. 5	287	Nails, kegs. 49	280
Iron, cs. 5	51	Ag. imp. pkgs. 59	1,477
Glassware, cs. 13	51	Revolvers, cs. 5	847
Liverpool.		Coal, tons, 755	2,075
Guns, cs. 2	170	Rifles, cs. 2	154
Hdw., cs. 133	5,430	Tel. m'l, pkgs. 50	4,078
Mach'y, cs. 85	4,805	Pt'd ware, cs. 2	154
Belting, cs. 37	925	Cutlery, pkgs. 241	4,910
Belting, cs. 37	925	Twine, cs. 2	110
Lub. oil, bbls. 50	565	Glassware, cs. 13	51
Ag. imp. pkgs. 279	7,900	Powder, lbs. 6,221	5,438
States, cs. 13	52	Mf. iron, pkgs. 150	600
Mf. iron, pkgs. 10	110	Pumps, pkgs. 4	164
Wringers, cs. 13	921	Cartridges, cs. 702	1,773
Hull.		Iron, bbls. 177	2,173
Twine, cs. 2	110	Chili.	
Ag. imp. pkgs. 4	100	Nails, pkgs. 266	3,277
States, cs. 42	150	Hdw., cs. 1200	1,210
S'p'd ware, cs. 3	138	Coal, tons, 100	300
Hdw., cs. 103	3,549	Mf. iron, pkgs. 2	154
Bristol.		Nails, bogs. 15	82
Ag. imp. pkgs. 4	600	Pt'm, gals. 72,000	8,203
Pt'm, gals. 239,635 24,104		Glassware, cs. 14	974
Glasgow.		Ag. imp. pkgs. 47	974
Mf. iron, pkgs. 1	15	Revolvers, cs. 5	847
Lub. oil, bbls. 472	4,732	Rifles, cs. 2	154
Cartridges, cs. 2	45	Tel. m'l, pkgs. 50	4,078
Hdw., cs. 2	45	Pt'd ware, cs. 2	154
Ag. imp. pkgs. 7	60	Cutlery, pkgs. 241	4,910
Limbrick.		Twine, cs. 2	110
Pt'm, gals. 53,520 5,519		Glassware, cs. 13	51
London.		Powder, lbs. 6,221	5,438
Pt'm, gals. 1,477,584 131,850		Mf. iron, pkgs. 150	600
Mach. oil, bbls. 2	21	Nails, kegs. 49	280
Belting, cs. 37	925	Ag. imp. pkgs. 59	1,477
Metal g'ds. cs. 16	625	Revolvers, cs. 5	847
Nails, kegs. 1	50	Rifles, cs. 2	154
Ag. imp. pkgs. 15	300	Tel. m'l, pkgs. 50	4,078
Copper, cks. 95	16,575	Pt'd ware, cs. 2	154
Lub. oil, gals. 15	1,500	Cutlery, pkgs. 241	4,910
Sew. machs, cs. 234	3,342	Twine, cs. 2	110
Hdw., cs. 89	1,421	Glassware, cs. 13	51
R. E. cars. 3	2,920	Powder, lbs. 6,221	5,438
Belting, cs. 37	925	Mf. iron, pkgs. 150	600
Mf. iron, pkgs. 4	63	Nails, kegs. 49	280
Car wheels, 50	600	Ag. imp. pkgs. 59	1,477
Cutlery, cs. 3	102	Revolvers, cs. 5	847
Mach'y, cs. 77	2,800	Rifles, cs. 2	154
Vigo.		Tel. m'l, pkgs. 50	4,078
Pt'm, gals. 72,000 7,920		Pt'd ware, cs. 2	154
Gibraltar.		Cutlery, pkgs. 241	4,910
Arms, cs. 5	340	Twine, cs. 2	110
Pt'm, gals. 10,000 1,250		Glassware, cs. 13	51
British North American Colonies.		Powder, lbs. 6,221	5,438
Coal, tons, 295	1,237	Mf. iron, pkgs. 150	600
Steel, bxs. 7	100	Nails, kegs. 49	280
Mf. iron, pkgs. 33	417	Ag. imp. pkgs. 59	1,477
Sew. machs, cs. 42	150	Revolvers, cs. 5	847
Pt'm, gals. 8,805 1,208		Rifles, cs. 2	154
Glassware, cs. 13	51	Tel. m'l, pkgs. 50	4,078
Hdw., cs. 6	49	Pt'd ware, cs. 2	154
British West Indies.		Cutlery, pkgs. 241	4,910
Pt'm, gals. 10,334 2,668		Twine, cs. 2	110
Nails, kegs. 129	288	Glassware, cs. 13	51
Hdw., cs. 25	95	Powder, lbs. 6,221	5,438
Mf. iron, pkgs. 6	62	Mf. iron, pkgs. 150	600
Glassware, cs. 13	51	Nails, kegs. 49	280
Twine, cs. 2	110	Ag. imp. pkgs. 59	1,477
Notions, cs. 3	80	Revolvers, cs. 5	847
British Possessions in Africa.		Rifles, cs. 2	154
Pt'm, gals. 6,000 900		Tel. m'l, pkgs. 50	4,078
Hdw., cs. 13	51	Pt'd ware, cs. 2	154
Nails, kegs. 129	288	Cutlery, pkgs. 241	4,910
Glassware, cs. 13	51	Twine, cs. 2	110
Ag. imp. pkgs. 115	1,780	Glassware, cs. 13	51
British East Indies.		Powder, lbs. 6,221	5,438
Pt'm, gals. 394,000 50,540		Mf. iron, pkgs. 150	600
New Zealand.		Nails, kegs. 49	280
Mach'y, cs. 31	5,981	Ag. imp. pkgs. 59	1,477
Wire, pkgs. 54	650	Revolvers, cs. 5	847
Pt'm, gals. 5,350 1,344		Rifles, cs. 2	154
Ag. imp. pkgs. 121	6,146	Tel. m'l, pkgs. 50	4,078
Belting, bales. 6	430	Pt'd ware, cs. 2	154
Cars, pkgs. 33	19,700	Cutlery, pkgs. 241	4,910
Sandpaper, pkgs. 93	3,500	Twine, cs. 2	110
Glassware, cs. 46	744	Glassware, cs. 13	51
COAL.		Powder, lbs. 6,221	5,438

the dealers here in the city have had fully as much as they could attend to, and in one or two instances we hear of parties who had oversold to such an extent as to make it necessary for them to suspend taking orders for a time. It is reported that the Delaware and Hudson Canal Co. did not hold an auction sale during the month, on account of having so many orders upon their books as to make such a course entirely unnecessary. The amount of Coal which has been sold during the past week is certainly much larger than can be conveniently disposed of unless vessels and boats become more plenty. Freighters have a decidedly upward tendency. Boston is quoted at from \$1.25 to \$1.35, while Providence is 90 cents and upward. This scarcity of vessels is more seriously felt at Philadelphia than at this port. This can be seen from the following circular, issued on Monday by the Philadelphia and Reading Coal and Iron Co.

"We desire to call your attention to the importance of securing vessels, if you desire us to fill your orders that we now have on hand. We cannot consent to carry the present orders for delivery after the 30th of May, and, if you desire the Coal delivered in May, we trust that you will see that vessels are secured during the month to carry it. It is impossible for us to agree to secure such vessels, and, with the prospect of an advance in the price of Coal, we can only hold ourselves responsible to fill present orders during May, provided you secure vessels for transportation."

The scarcity of vessels is made a pretext for a most carefully-worded circular, intended to give the market an upward tendency. What effect the scarcity of vessels can have upon the price of Coal at the shipping points it is difficult to see. The whole gist of the matter seems to be that vessels are not to be had, and customers must shift for themselves and find their own means of transportation. It may also be taken as a straw, showing that Mr. Gowen is ready to take advantage of any circumstance, however small, to stem the constant downward tendency of prices. An upward turn of prices in the month of June would be somewhat of a novelty, and is something that we hardly expect this season.

Taken altogether, the market is a most favorable one for consumers, and they are taking the best possible advantage of it. The trade up the river and through the canals has already begun, although we believe the canals are hardly open. River freights will probably be much easier when the boats begin to reach New York.

#### PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St. PHILADELPHIA, May 6, 1879.

**Pig Iron.**—There has been a fair demand during the week, and sales to a much larger extent might have been made if the furnaces had been in a condition to make deliveries. We still hear complaints of dullness, however, but these, when investigated, appear to be from parties who have no iron to offer. Good brands are scarce, and the demand is sufficient to absorb all desirable lots at full prices. The market has an upward tendency, and the prospect of lower prices seems to be more remote every day. Consumers appear to have full confidence in values, and are well satisfied to duplicate purchases, recent or otherwise. This confidence is based largely on the fact that they have orders on hand for their products, so that purchases are in no sense speculative, but the reverse, and are intended to protect their own contracts. Stocks are in small compass, and so far as can be seen at present, production is



**Scrap.**—There is a very fair business in the aggregate, although the inquiry is chiefly for small lots. Prices remain unchanged. Old Car Wheels ranging from \$19.50 to \$20.50, gross, the outside figure for selected. Sale of 100 tons at \$19.50; Old Castings, \$14.50 to \$15, gross; Cast Bittings, \$10.50 to \$11; Wrought Turnings, 70¢ to 75¢ per 100 lb; Wrought Scrap, \$1.05 to \$1.10; Boiler Iron, \$1.10 to \$1.15; Car Axles, \$1.35 to \$1.40; Car Springs, \$1.50.

**Window Glass.**—The demand keeps up well, our manufacturers generally are well supplied with orders, and the outlook is considered favorable for a good summer and fall trade. The shipments, by river in particular, have been quite liberal for some weeks past, and stocks in first hands are not large. Discount unchanged at 75¢ and 5¢ for car load lots.

**Coke.**—There is a fair degree of activity. Manufacturers continue to have orders sufficient to absorb their product, but if there should be an iron lockout, the demand for coke would be largely curtailed, as the pig iron furnaces are the largest consumers. The future of the market, therefore, is dependent largely upon the matter in question, while, for the time being, business is active. Prices are still quoted steady at \$1.15 to \$1.25 per ton, delivered free on cars at ovens.

**Petroleum.**—The situation remains substantially the same as noted in our report of last week. Business is dull for the season and prices lower than for a number of years. The Legislature has taken no decided action as yet in the measures pending in that body with a view to taxing new wells, and it is doubtful now whether it will get through, as considerable opposition is developing.

### CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts.,  
CHATTANOOGA, May 5, 1879.

Trade during the past week has been fair but quiet. Retail men are doing fairly. Wholesale trade, having supplied country dealers' wants for the spring, is rather dull. Manufacturers generally are busy, but not pressed. Orders come in rather slowly, though there are enough to insure a fair activity until summer trade opens. The weather has been cool and pleasant.

**Pig Iron.**—Has shown more activity than for some time. Prices are fairly firm and no pressure by holders to sell. Two furnaces, Cherokee Charcoal and South Pittsburgh Coke, will get fairly under operation this month. The latter is the largest in the Southern districts, and the same size as Lucy and Isabella of the Pittsburgh district. Cherokee has orders ahead for all it can make for four months, showing the past and present scarcity of Charcoal. The sales of Foundry Irons for the week have been fair, showing decided improvement in the demand. Coke Irons—No. 1 Foundry, \$17.50 to \$18.50; No. 2, \$16 to \$17; Gray Forge, \$14 to \$15; White and Mottled \$12 to \$13. Hot-Blast Charcoal—No. 1 Foundry, extra, \$20 to \$21; ditto, \$18 to \$20; No. 2 Foundry, \$16 to \$18; Gray Forge, \$16 to \$18; White and Mottled, \$15. Cold Blast Charcoal—Car Wheel Metal, \$22.50 to \$27.50; do, Extra Standard, \$24 to \$29.50; Forge, \$17 to \$22.

**Muck Bar.**—\$27 to \$34; Old Rails, \$18 to \$18.50; Old Car Wheels, \$18; Wrought Scrap, \$17 to \$19.

**Ores.**—Brown Hematite, 50 to 55¢ per ton, \$1.75 to \$2.25. Red Fossiliferous, 50 to 55¢ per ton, \$1.20 to \$1.50. The above prices for ore delivered in Chattanooga on cars, or on the wharf from flat boats.

**Nails.**—The demand is fair, but prices continue unsatisfactory. The mills in this district are making a determined effort to push their trade Northward, and are now making considerable shipments to Nashville. We quote at \$2.25 rates; usual discount on job lots.

**Manufactured Iron.**—Is dull, though enough is doing to keep the mills going. We quote: Bars, 2¢; Railroad Spikes, 2.50¢; Light Rail, 2.25¢; Track Bolts, 3¢; Trestle Bolts, 4¢.

**Coke.**—We quote 11¢ to 15¢ per bushel for washed foundry. Furnace, full supply at \$2 per ton, free on cars at Chattanooga or South Pittsburgh.

**Coal.**—There is no change in the market nor in prices. We quote run of mine, free on cars in Chattanooga, at \$1.25 to \$1.75 per ton. Lump, as per quality, 10¢ to 12¢ per bushel.

**Pig Lead.**—4¢; Ingot Copper, 18¢.

**Iron Rails.**—We quote at \$35 per ton.

### ST. LOUIS.

St. Louis, Mo., May 5, 1879.

**Pig Iron.**—Moves but slowly, and prices as given last week remain unchanged. Two charcoal furnaces—the Scotia and Midland—are now in blast, and the supply of Missouri iron will therefore be fully up to the demand.

#### CHARTERED HOT BLAST.

Missouri..... \$10.50 to 20.00  
Southern..... 18.50 to 19.50  
Hanging Rock..... 21.00 to 22.50

#### COKE AND COAL.

Missouri..... None offering  
Southern, No. 1..... 18.50 to 19.50  
Ohio River, No. 1..... 19.00 to 21.00  
Jackson County, No. 1..... 19.00 to 21.00  
Hocking Valley, No. 1..... 19.00 to 21.00  
Anthracite..... 20.50 to 21.00  
No. 2 and Mill 3¢ to 4¢ per ton less.

#### COLD BLAST.

Missouri..... 25.00 to 30.00  
Southern..... 25.00 to 30.00  
Ohio..... 30.00 to 32.00

#### IRON ORE.

Iron Mountain..... 5.50 to 6.00  
Southwest..... 4.75 to 5.00  
Ore for fire..... 6.50 to 7.00

**Old Car Wheels.**—Are not coming in faster than the demand, and prices can fairly be quoted at \$20.

**Old Rails.**—Are not meeting as ready sale as holders would like; \$20 to \$20.50 is the best price which can be obtained.

### BOSTON.

MAY 2.—There continues to be a fairly active demand for Pig Iron at unchanged

prices. The prices from the Boston stores and wharves for small lots are \$20.50 to \$21.50 for No. 1, and \$19 to \$20 for No. 2. Manufactured Iron.—All of the Eastern Bar mills are active, while sales are being made from the stores at 2¢ per lb for Refined and 1 1/2¢ for Common. Nails are selling at \$2.25 per keg. Sheet Iron at 2 1/2¢ to 3¢ for single Common and 3¢ to 3 1/2¢ for double do.; 3 1/2¢ to 4¢ for Refined; 6 1/2¢ to 6 1/2¢ for Galvanized, Nos. 14 to 20; 6 1/2¢ to 8 1/2¢ for do., Nos. 21 to 28; 11 1/2¢ to 12¢ for Russia. Perfect, and 1/2¢ less for do. No. 1 stained. All of the Plate Iron mills are running, and a fair amount of business is doing at full prices, quoting \$2.30 for Tank, \$2.50 for C. No. 1, \$2.75 for Shell, \$3.75 for Flange. We quote American Tool Steel at 12 1/2¢ to 13 1/2¢; English do. at 14 1/2¢ to 15 1/2¢; American Spring Steel at 5¢ to 6¢; English do. at 7¢ to 7 1/2¢; Tire Steel at 3 1/2¢ to 4¢; Bessemer Machinery at 4¢ to 5 1/2¢; and Cast do. at 5¢ to 6¢. Copper continues steady, and we quote 16¢ to 16 1/2¢ for Lake. For manufacturers New Sheathing is held at 22¢; Braziers, 24¢ to 26¢, and Bolts, 24¢; Yellow Metal Sheathing sells at 12 1/2¢ to 13¢ for English and 14¢ to 16¢ for American. Lead.—The only change in Lead has been a further decline of 1/2¢ in Pipe. Pig continues to sell in large lots at 3 1/2¢; for smaller lots, from store, we quote: Pig, 3 1/2¢ to 3 3/4¢; Sheet, 5 1/2¢; Pipe, 4 1/2¢; Tin-lined Pipe, 12¢; Bar Lead, 6¢; all of these excepting Pig are subject to the usual trade, or 10¢ discount. Antimony is still in light demand, but steady, and we quote 12 1/2¢ to 13¢. Spelter continues dull, being held at 5¢ for the various grades. Tin is easier, and Straits in large lots can be bought for 14 1/2¢. Refined English is scarce and high. For smaller lots we quote below: Straits, 15¢ to 15 1/2¢; Banca, 18 1/2¢ to 19¢; English L. & F. 15 1/2¢ to 16¢. We quote Plate Charcoal L. C., \$6.50 to \$7; Coke, \$5.25 to \$5.75, and Charcoal Terme, \$6 to \$7.75.—Commercial Bulletin.

### BALTIMORE.

Mr. W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of May 5: The improved feeling already noted continues. Values hold firm, and there is a regular steady local demand at unchanged figures:

Refined Bar Iron, 1 to 6 by 1/2 to 1 1/2 in. 1.50 to 2.00  
" " 1/2 to 2. Round " 1.50 to 2.00  
" " 1/2 to 2. Square " 1.50 to 2.00  
" " 1/2 to 2. Wide and upward " 2.00 to 2.50  
Band Iron, from 1/2 to 1 in. wide " 2.00 to 2.50  
Horse-shoe Iron " 2.00 to 2.50  
Norway Nail Rods " 4.00 to 5.00  
Black Diamond Cast Steel " 12.00 to 13.00  
Machinery Steel " 12.00 to 13.00  
Cast Spring Steel " 12.00 to 13.00  
Homogeneous Steel Plate " 5.00 to 6.00  
Common Horse Nails " 10.00 to 12.00  
R. R. Spikes, 5 1/2 to 6 in. " 2.00 to 2.50  
Fertile Horse shoes, 3/4 kg of 100 lbs " 4.00 to 4.50  
Mule shoes " 3.00 to 3.50

Putnam Horse Nails..... 18 to 20 21 23¢  
Globe Horse Nails..... 18 to 20 21 23¢  
Less list discount to the trade.

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of May 5: Below we quote present prices for Pig Iron and Blooms, with a fair demand for both:

Baltimore Charcoal Wheel Iron..... \$26.00 to 28.00  
Virginia..... 27.00 to 30.00  
Anthracite No. 1..... 28.00 to 30.00  
" No. 2..... 28.00 to 30.00  
" Mottled and White..... 17.00 to 18.00  
Charcoal, C. B. Blooms..... 50.00 to 52.00  
" Billets..... 52.00 to 55.00  
Refined Blooms..... 45.00 to 50.00

### LOUISVILLE.

Messrs. Geo. H. HULL & Co., under date of May 5, write us as follows: The market shows less animation. The sales are confined to lots to cover contracts or for immediate use, and there is little or no demand for future delivery. The usual time, 4 mos., is allowed on the quotations below:

No. 1 Hanging Rock, Charcoal..... \$21.00 to 22.00  
No. 2 " " " " " 20.00 to 21.00  
No. 1 Southern, Charcoal..... 19.00 to 20.00  
No. 2 " " " " " 18.00 to 19.00  
No. 1 Hanging Rock, Stonecoal and Coke..... 19.50 to 20.00  
No. 2 " " " " " 18.50 to 19.00  
No. 1 Southern, Stonecoal and Coke..... 19.00 to 19.50  
No. 2 " " " " " 18.00 to 18.50  
" American Scotch " " 18.00 to 19.00  
Silver Gray..... 17.00 to 18.00

MILL IRONS.  
No. 1 Charcoal, Cold-short and Neut'l..... 16.50 to 17.50  
No. 1 Stonecoal and Coke, Cold-short and Neut'l..... 17.00 to 18.00  
No. 2 Stonecoal and Coke, Cold-short and Neut'l..... 16.50 to 17.00  
No. 1 Missouri and Indiana, Red-short and Neut'l..... 20.00 to 21.00  
White and Mottled, Cold-short and Neut'l..... 15.50 to 16.00

CAR WHEEL AND MALLEABLE IRONS.  
Hanging Rock, Cold-blast..... 30.00 to 32.00  
Alabama and Georgia, Cold-blast..... 28.00 to 30.00  
Kentucky, Cold-blast..... 27.00 to 30.00

### CINCINNATI.

Messrs. E. L. HARPER & Co., under date of May 5, write us as follows: A fair demand has prevailed through the week, and no new features have been developed. Buyers are generally ready to buy at present rates to the extent of their wants, but not inclined to anticipate them, while sellers are not inclined to press sales. Most of the large mills and iron works in operation are well supplied with orders for immediate and future delivery, and the prospect appears favorable for an increased consumption of iron during the coming year. We continue to quote:

NOT-BLAST FOUNDRY.  
Hanging Rock C. C., No. 1..... \$21.00 to 22.00  
" C. C., No. 2..... 20.00 to 21.00  
Hanging Rock Coke and S. C., No. 1..... 17.50 to 18.00  
" S. C., No. 2..... 15.00 to 17.00  
Virginia Coke, No. 1..... 15.00 to 17.00  
" No. 2..... 15.00 to 17.00  
Shawnee Am. Scotch, No. 1..... 20.00 to 21.00  
" S. C., No. 2..... 17.00 to 18.00  
Hocking Valley S. C., No. 1..... 17.00 to 18.00  
" S. C., No. 2..... 17.00 to 18.00

IRON IRONS.  
Hanging Rock, No. 1 C. C..... 19.00 to 19.50  
Hanging Rock, No. 1 Coke..... 17.00 to 17.50  
Longdale, No. 1 Coke..... 18.00 to 18.50  
Ala. and Tenn. No. 1 C. C..... 17.00 to 17.50  
Red-short, No. 1 Coke..... 18.50 to 19.00  
Cold-short, No. 1..... 15.50 to 16.00  
Old Rails, prime..... 15.00 to 16.00

CAR WHEELS AND MALLEABLE.  
Hanging Rock C. B..... 28.00 to 30.00  
Cherokee C. B..... 28.00 to 30.00  
Southern and Western Brands..... 26.00 to 28.00

### RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of May 5: No movement of importance in Iron the past week. The same active inquiry for Old Rails and Wrought Scrap Iron exists as during the past month. The market is firm at quotations as below:

American Scotch Pig Iron..... \$21.50 to 22.50  
Anthracite, No. 1..... 20.00 to 21.00  
" No. 2..... 18.00 to 19.00  
" No. 3..... 17.00 to 18.00  
" Mottled..... 14.50 to 15.50  
" No. 1..... 18.00 to 19.00  
" No. 2..... 16.00 to 17.00  
Va. Cold-blast Charcoal, Cold-short..... 20.00 to 23.00  
" " " " " 18.00 to 21.00  
Va. Warm-blast " " " 17.00 to 18.00  
Va. " " " " " 17.00 to 18.00  
Old Rails..... 15.50 to 16.50  
Wrought Scrap No. 1..... 17.00 to 19.00  
" (machinery)..... 15.00 to 16.00  
Richmond Refined Bar Iron..... 30.00 to 32.00  
Horse Shoes per kg..... 4.00  
Mule..... 5.00  
Old Dominion Nails, Standard Size, 3/4 kg..... 2.25 to 2.50  
Freights to Philadelphia, \$1.40 per ton of 2240 lbs by rail.  
Freights to New York, \$1.60 per ton of 2240 lbs by rail.

## Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., April 21, 1879.

#### THE EASTER HOLIDAYS

Last week greatly interfered with business in many cases, and in others served as a sufficient excuse for closing works and offices several days. Under ordinary conditions these holidays begin with Good Friday and are finished by Easter Monday, but in these dull times things are scarcely regulated by customary rules, and a few days' idleness more or less are of so little moment that this year not a few business premises remained unopened until Thursday.

#### THE WEATHER

during the period of amusement was, however, simply execrable, taking the view that by this time we ought to be well into the frosty spring. As a matter of fact, Good Friday was bright and fine, but very cold—so keen, indeed, that I emerged from the historic portals of Haddon Hall to find a few flakes of snow floating about in the atmosphere. On the Derbyshire moors, which I crossed twice on the day in question, there was a thin covering of snow. Next day there were numerous snow showers, and on Easter Sunday snow fell as thickly and as regularly as though the occasion had been Christmas. On the level it attained a depth of 8 or 9 inches, and there were numerous drifts over 2 feet high. The fall was pretty general, even the Isle of Wight being covered with several inches of the wintry coating. On the moors near Sheffield, where I spent the brief vacation, the snow drifted 3 feet in depth, and the whole region, bleak and bare at the best of times, assumed that wild and rigorous appearance which belongs to the middle of winter only. This weather, I may say, although of little direct consequence to the iron and other trades, is most potent in its indirect issues, seeing that

#### AGRICULTURE IS HINDERED

by the continuance of this exceptionally severe and protracted winter. In Scotland, and some parts of the North of England, there have been snow, frost and ice almost without intermission since October last, and even in the Midland districts of this country we have not been free from these chilling visitants for nearly six months in one rarely interrupted line. While this is the case the cultivation of the ground can only be conducted in an imperfect manner, and the results to be secured are so uncertain that farmers have no inducement whatever to expend their hard earnings in the purchase of implements and machinery. This abstention falls heavily upon one of our most important industries, and not only so, but is felt in a hundred different ways by the shopkeepers and other inhabitants of our small towns and the rural districts. It is this reason which has mainly caused the excessive poverty of the home trade, in which there is scarcely likely to be any revival, unless the harvest should prove to be unusually abundant and satisfactory. At the present time every house with outstanding accounts in the provinces is complaining of the excessive amount of trouble experienced in getting in money. Orders are few in number and small in size, so that there has in all probability rarely, if ever, been a time when business had a worse appearance at home. To this circumstance, more than anything else, we owe the depression of our manufacturing industries. I heard the other day, of a

WONDERFUL AMERICAN MACHINE which has just been introduced into this country for knitting purposes. It is now at Nottingham, and is said to be of such an amazing kind that the finest weaving machine is a "mere foot to it." Some of the Lancashire manufacturers at Bury and elsewhere are not unlikely to adopt it for hat making, and a variety of other purposes. It has 42 needles—or may have 10,000 if need be—and may be readily run at 160 revolutions per minute. It is the invention of a Scotchman, who has spent 14 years in perfecting it. He offered it first in England, but could not obtain a purchaser. He then went to the United States, where its merits were speedily recognized and appreciated. Having sufficiently protected his machine by patents, he is back again in England, and is said to be about to sell his rights to a wealthy company.

#### MR. BRIGHT.

the eminent Liberal, the friend of Cobden, and a general philanthropist, in speaking the other day at Birmingham (for which town he is one of the three members) took up the idea of our foreign trade being of any particular value to us. In direct opposition to every political economist who has written or spoken on the subject, he contended that India is not worth the price it costs us to maintain it, and virtually recommended that it should be

given up. Gibraltar, Malta and other strongholds he placed in the same costly and useless category. Mr. Bright called your tariff a barbarous one, as also was that of Russia, and he seemed to think that a sort of gushing sentimentalism—professions of universal peace and good will toward men, and other expressions of the same high-falutin sort, would bring about immediate results and restore to us a prompt activity of trade. I do not know in what light Mr. Bright's Brummagem constituents regarded the amazing advice of their Quaker senior member, but I think it may be inferred that none of them are less determined than before to retain and extend their foreign business. The so-called Liberal statesmen of this country are not at any time, or under any circumstances, accredited the possession of an intelligible foreign policy, but it would not, perhaps, be too much to expect from them a certain, even if moderate, amount of common sense as regards commercial matters. All who know anything of Mr. John Bright respect his sturdy honesty and fearlessness of speech, but it is too bad to have to witness the spectacle of his advocacy of a policy which is opposed to all the dictates of our best interests, our intelligence, and in a certain measure, to the progress of the outside world. We produce so largely in excess of our own requirements, as Mr. Bright must be well aware, that we are literally compelled to seek and maintain foreign and colonial outlets for our manufacturers. We must sell in order to live, but if we follow Mr. Bright's advice we should cut off our nose in order to save our face. More unintelligible and absurd rubbish than such talk it is, therefore, difficult to imagine.

#### SCOTCH PIG IRON

has not experienced any marked change during the week, although the continued strikes in the North of England have diverted business in its favor. Shipments are on a large scale, although there are now 244,591 tons in Connal's stores, and 87 furnaces blowing. So far the exports of Scotch pig this year are highly satisfactory, being 29,058 tons in excess of those for 1878 to the same date. Writing from Glasgow on April 19 James Watson & Co. said: "Notwithstanding the continuance of the Durham strike, and the shipments (more especially foreign) being large, our market has been quiet throughout the week. There is a fair demand for the special brands of makers' iron. Monday being a holiday, we had no market, but on Tuesday it was irregular, fluctuating between 43/2, 43/3/4, and 42/10, cash. On Wednesday it was steady from 42/10 to 43/ per ton, while yesterday a small business was transacted from 42/10 1/2 to 42/9 1/2, cash. To-day the market has been livelier, a good business being done from 42/10 1/2 to 43/2, cash, closing this afternoon sellers at 43/1 1/2, buyers being very near. The shipments last week were 12,913 tons, as compared with 944 tons for the corresponding week of 1878. We quote:

No. 1.	No. 2.	No. 3.
G. M. B., at Glasgow..... 43 6	41/9	41/9
Gartsherrrie, "..... 43/3	43/0	43/0
Coltness, "..... 42/6	44/9	44/9
Summerlee, "..... 42/6	43/6	43/6
Langloan, "..... 42/6	43/6	43/6
Carbrioe, "..... 42/6	43/6	43/6
Calder, at Port Dundas..... 42/6	43/6	43/6
Glenarnock, at Ardrossan..... 42/6	43/6	43/6
Eglington, "..... 42/6	43/6	43/6
Balmillington, "..... 42/6	43/6	43/6
Shotts, at Leith..... 42/6	43/6	43/6

#### IN CLEVELAND

there is a very buoyant feeling, consequent upon the new steel-making process. At the present time current figures in Cleveland for general makers' brands are:

No. 1 Foundry..... 39/ Mottled..... 34/

No. 2 "..... 37/ White..... 33/6  
No. 3 "..... 35/9 Refined metal..... 31/6  
No. 4 "..... 35/ Kentledge..... 40/

No. 4 Forge..... 34/6 Cinder..... 31/

All net cash, and delivered f. o. b. at makers' wharves on the Tees.

#### AT SHEFFIELD

there is exceedingly little change for the better. Indeed, I am disposed to believe that the only well-employed concerns are those devoted to the production of steel rails. These articles are in capital request. Wilson & Cammell, of Dronfield, have orders on hand for about 100,000 tons, and are running night and day. Brown, Bayley & Dixon are fairly busy, and have secured an order from a home railway for 20,000 tons. John Brown and Samuel Fox & Co. are out of the market at present prices. Steel, Tozer & Hampton are doing moderately well, mostly on English orders, for lots ranging from 500 to 12,000 tons. Charles Cammell & Co. are doing fairly well at their Penistone branch works, and have several Russian, American, &c., orders in course of execution. Prices in recent instances have been about 24/ 10/ to 24/ 15/ per ton, but I hardly think anything under 25/ has now any chance of being accepted. For tires and axles there is a little stronger call, but nothing approaching to briskness. The same remark applies to buffers and springs. Wire is in moderately good request, and is being applied to many purposes—such as window shutter supports—for which cord was formerly exclusively used. The crucible steel makers are very slack, places such as Thomas Frith & Sons being unable to find their men more than three days' work weekly. The file trade remains unprecedentedly dull, with prices cut finer than ever. In cutlery there is a tolerable turnover, a good proportion being for the United States, India, Canada and Australia. As I mentioned last week, Joseph Rodgers & Sons are sending considerable lots of table knives into your territory. The electro-platers are worse off than ever, the best work in hand being, I learn, the services and fittings for a new Glasgow hotel and two or three new steamships, with small corporation orders for official plate and table decorations. Tools are slow of sale, as are also saws—in which, I may say, American, French and German competition is more formidable than ever. I know of instances, indeed, in which German saws are being imported for effecting certain peculiarly Sheffield metal-working processes.

#### STAFFORDSHIRE AND BIRMINGHAM

are not notably altered since I last wrote on your behalf. Bars remain at 26/ 5/ for ordinary and 27/ 10/ best marked; hoops, 27/ to 27/ 10/, and sheets 27/ to 27/ 15/ per ton. A great deal of underselling is in pro-

gress, a glaring case being mentioned in which an order for hoop iron of awkward gauges has been taken at no less than 23 per ton lower than the makers' regular quotation. This discloses the existence of a state of affairs which cannot last much longer; indeed, the only wonder is that the parties resorting to such practices should as long have enjoyed immunity from the natural and necessary results of their keen practice. The production of Staffordshire pig iron is still relatively unimportant, only one-sixth of the native furnaces being in operation. Derbyshire pig is so much better for general purposes, and so much cheaper, that it is literally keeping the local material out of the Staffordshire market. At Birmingham there is a consoling production of almost all kinds of hardware, not so heavy an output as might be desired, but still just enough to keep matters moving, and to give employment to the majority of the workmen. At Stourport the Anglo-American stamping and enameled-ware concern has got into fair working order, and is in the market with its wares. I understand that its management is in the hands of a gentleman not unknown in St. Louis.

#### THE DURHAM STRIKE

has grown in its incidence, and is having serious consequences. There are some 40,000 miners out of work, and the cessation of their labors has thrown idle several other classes of workmen, including ironstone miners, blast furnace men and general ironworkers. At Consett a number of furnaces are being damped down to-day, and that course is also being adopted at other large establishments. The ill-advised miners are now having a sort of plebiscite as to whether they shall go on with their strike or agree to arbitration. The result will be known to-night, but there is little chance of the milder course being adopted, inasmuch as a private telegram mentions that there are more thousands for the strike than scores for arbitration.

#### SOUTH WALES AND MONMOUTHSHIRE

were scarcely so well to the fore with their exports last week, the only items of any note during that period having been 360 tons of rails to Lisbon and 116 to Bahia from Rhymney; 563 tons of rails to Bahia and 480 tons bars to Huelva from Dowlais. At Cardiff and Newport there are still heavy importations of foreign ore, last week's total having reached over 13,000 tons.

#### THE BOLT AND NUT TRADE

is greatly exercised by the statement (made by the Belgian correspondent of the *Ironmonger*) that the government has sent a well-known colonel into Belgium, to Mons, to purchase rivets, bolts and screws for the use of this nation. The colonel's orders are said to be large—so considerable, indeed, that the correspondent tells us that already all the factories of La Louviere are alive with activity. More is pretty certain to be heard of this matter in Parliament and elsewhere. As prices now are, there certainly is no reasonable excuse for buying screws outside our own trade.

#### THE METAL MARKETS

have been moderately well maintained, but the holidays have naturally limited transactions. The weekly summary runs thus: Copper is steady at 257/ 10/ for good ordinary brands of Chili bars, spot, and 258/ to 258/ 10/ arrival; Wallaroo, 264/ 10/ to 265/; Burma, 263/ 10/ to 264/; English Tough, 262/ 10/ to 263/ 10/; best selected, 264/ to 265/; and strong sheets, 268/. The charters from Chili for the first half of April have been advised as being 600 tons. At the forthcoming public sales there will be offered about 1061 tons of Wallaroo cake and 9 tons ingot, besides about 164 tons Burma cake and 66 tons ingot. Tin is steady and in fair request, at from 269/ 10/ to 269/ 15/ for fine foreign, and 269/ to 269/ 10/ landing and forward; English ingots, 269/ to 270/. The sales of Billiton in Batavia on Tuesday realized an average of 45.95 per picul and 42 1/4 per 50 kilos, or about 271/ 5/ per ton in Holland. There have been imported here 3061 ingots in the Westbury from Launceston, and 2914 slabs in the Ethel from Hobart Town. Stocks are rather heavier. Tin Plates are on the same basis as last week, about 16/6 for ordinary cokes. Charcoals are steady, but are not selling largely. Makers are firm, notwithstanding, and decline to make any concessions as to prices. They have obtained a certain amount of compensation for the dearthness of tin by the reduced prices of hematite pig iron. Lead is dull, at 214/ 10/ to 214/ 15/ for English pig, and 214/ 5/ for soft Spanish, without silver. Spelter is unchanged at 215 for ordinary Silesian, with a slow demand. Quicksilver is selling at 26/ 2/6



laroo, \$64. 10/ @ \$65; Burra, \$63. 10/ @ \$64; outside brands of Australian, as in quality, down to \$59.

#### SPRINGFIELD.

\$4. 7/6 for 20 English f. o. b. convenient port. Demand is slack, and makers are making a concession of fully 5/ per ton in price to induce fresh orders. Ferro-manganese, firm in price, with increasing demand, especially for high strengths, say 60 to 80 %.

#### MANUFACTURED IRON.

Very little change has taken place in the market for manufactured iron since our last. The same slackness of demand prevails, with little or no prospect of improvement, and makers all round are very short of work, which causes what few orders there are offering to be keenly competed for, no matter how unimportant they may be. A slight stimulus has been given to the export trade by the reopening of navigation in the North of Europe; but, on the other hand, demand from the Australian colonies is not so brisk as it was a month or so back. Prices are normally unaltered, £7. 10/ being the standard for marked and £6 for unmarked bars. There is, however, a great deal of underselling going on, and we hear of some extraordinarily low figures being accepted, notably one case in which an order for hoop iron of awkward gauges has been taken at £3 1/2 ton below the maker's standard quotation. A return issued of the manufactured iron trade in the Northern districts discloses an unsatisfactory state of things. The average net selling price of bars, angles, plates, and rails for the quarter just ended is £5. 14/8, or 4/ less than the previous quarter, and a fall of 12/8 in twelve months. The production during the past quarter was only 75,000 tons, as compared with 107,000 tons in the previous one, or more than 25 per cent. less. Our present quotations are:

WB	per ton	£ s. d.
LB	15	0
Ordinary brands	14	0

After a short period of improved demand and higher prices, this article is again very dull. Prices are declining almost daily, with little business passing.

#### REGULUS OF ANTIMONY.

\$46. 10/ compared with \$49 10/ same date last year. Market steady, with rather improved demand. Prices more regular and rather harder.

#### TIN.

	Now.	Same date, 1878.
English L. & F. Ingots, per ton	70	67
" Bars in Barrels "	71	68
" Refined "	72	69
Strait "	73	70
Australian "	70	63

The actual stocks of tin have increased again, although the total figures are somewhat lighter. Prices are rather higher. The present speculation still keeps control. Of the future one can only look for increased supplies so long as values are sustained as they are at present. English tin, with discount and other advantages in buyers' favor, is now the same price as foreign, and dull of sale thereat.

#### SPELTER.

Ordinary Silesian, \$15, compared with \$18. 10/ same date last year. Again lower in price, with dull demand.

#### TIN PLATES.

I. C. Coke, ordinary brands, 16/6; I. C. Coke, best, 18/; I. C. Charcoal, ordinary brands, 19/6; I. C. Charcoal, best, 21/ The ironmasters' quarterly meeting was held on the 10th inst. at Birmingham, as usual, and was numerously attended by the tin-plate trade. Apparently little business was done; makers asked 16/6 for ordinary wokes and buyers offered 16/ per box. Small transactions were reported at 16/3, but the old limit of 17/ was not heard of. Charcoal plates were steady, but not much inquired for. All round makers seemed only moderately booked, and the slightly difference in the views of buyers and sellers will not long stand in the way of business, probably. The dearth of tin is compensated for by a further reduction in the price of hematite pig iron, so that from a maker's point of view present prices should be very satisfactory. Charcoal ternes still continue in fair demand, present price of S. T. P., Dean, & Co. grade being 18/6 for 14x20, and 38/ for 22x20.

#### FOREIGN.

##### FRANCE.

(Montpellier des Interests Matérielles)

PARIS, April 23, 1879.—Metals.—The increase of animation which characterized the first half of April has been of short duration, and the French metal markets have relapsed into a duller mood. Copper.—There has been little change in prices, but holders have, nevertheless, succeeded in establishing a slight advance of 1 franc on Best Selected, and even a larger one of 4 francs the 100 kilos, on Chili Bars. We now quote first-brand bars, 156.50; Common do., 151.50; Ingots and Slabs, 155; Best Selected, 160; and pure Corrobor Ore, 157. Have goods nominally first-brand Bars, 148.75 @ 150, and good current Urmeneta and Lota 145 @ 147.50. Manganese reports no change. They quote as follows: Small refined ingots, 100; Sheet Copper, 180; Bolts, 190; Sheathing, 190, and yellow Metal do., 175. Tin has been very quiet, with a decline in Banca of 5 francs; in Billiton, of 4.25 francs; in Straits and Australian of 2, and in English of 2.5. We now quote Banca here or at Havre, 100; Billiton, 187.50; Straits and Australian, 185, and English at Havre or Rouen, 177.50. Manganese, with the exception of English Refined, is firm. They quote Banca, 285; Straits and French, 180, and English 182. Although weak, Lead has not varied in this market, and we quote as heretofore 37 @ 38; sheets and Tube, 46; Tube 10 by 13 millimeters, 49. At Havre First Fusion soft Spanish commands 37.38. At Marseilles Lead is weak and neglected at a fresh decline of 5 c. to 1 franc. They quote: Argentiferous, 36; First Fusion, 35; Second Fusion and Antimonial, 34; sheet and Pipe, 29; and shot, 49. Spelter has followed the downward tendency of the preceding metal, and we quote a decline of 50 c. here. We quote: Silesian, 45.50 @ 41.50, and Sheet Zinc, 60 francs, all the 100 kilos. Havre remains steady; they quote: Silesian, 41 @ 42. Sheet Zinc has risen 2 francs at Marseilles where Vieille Montagne is worth 55 and other brands command 54, while Old Remelted remains 50 francs. Iron.—Great activity is being displayed in this market, and under the influence of an active demand, an improvement of note is observable in merchant iron, which is now currently bringing 160 francs. At the Northern Works Merchant Iron is quoted 150, which is equal to 167.50 laid down at Paris. The city of Paris has made a large acquisition of sheds from the exhibition buildings at a 50 c. discount. In the Northern Districts, favorably influenced by the Paris revival, they have, moreover, received orders from the railroad companies. The Loire basin is under similar cheering influence. In the Haute-Marne the situation has also vastly improved, and a line of important contracts

has been brought to a successful issue, causing an upward tendency in values generally. They have received a great many commands there both for Sheet Iron and Machinery. Coal.—Mixed Coal sells at 5.50 francs; the demand for households has increased, and it may soon improve for industrial purposes likewise.

#### BRUSSELS.

(Revue Universelle.)

BRUSSELS, April 20, 1879.—Iron.—The week just brought to a close has given some unmistakable signs of improvement so far as activity is concerned. Orders are dropping in more copiously, and are getting to be more important as we proceed. Messrs. Delloye Bros. of Montigny sur Sambre, have received orders to the extent of 400 tons architectural iron, for export and for India. Messrs. Nicolaï & Delcure, of La Louvière, are dispatching 500 tons spikes. The revival has caused the Providence works to screw up their price list slightly, and they may succeed in maintaining their point. At all events purchasers seem to be fully understanding that we are on the eve of better times, and a good many consumers are now bold enough to stand ready for contracts extending far ahead, if producers are willing to sell them at rates not much higher than the ruling ones. They seem to be satisfied that at any rate there will be no receding from present prices. Makers are, on the other hand, in no hurry to sign away the control over large lots of iron manufacturers for many months ahead, and decline to treat on anything but the basis of prompt delivery. All we have said has no reference to Pig Iron, for the Luxembourg people with their low offers continue to stifle all tendency toward an improvement. They are now selling so little to go to France that they are thrown back upon the Belgian market, and spoil our prices accordingly.

#### GERMANY.

(Borrenshalle.)

HAMBURG, April 19, 1879.—Metals.—People in the Metal line have been watching with increased interest the tariff modifications now going on, and have bestowed less attention upon current business affairs than they otherwise would have done, especially at this time of the year, when we are in the midst of the spring campaign. After a protracted and severe winter, exhausting supplies very much in the hands of consumers, the outlook is by no means a discouraging one, and without wishing to be sanguine we are well able to see the future. Copper.—Absolutely nothing has been done, and we have but to repeat quotations; the same thing relates to other metals, which have also remained unaltered. We quote the various sorts of Copper the same as last week, between 64 and 85 marks as extremes, per 50 kilos, while Berlin quotes 64 @ 68. Tin.—The range for the various sorts remains 74 @ 77, at Berlin 71 @ 75. Lead is unaltered at 15.25 @ 15.50 at Berlin and at 15.50 @ 18 in this market. Spelter.—Berlin quotes 16 @ 16.50 marks the 50 kilos; Breslau, common brands, 14.50 @ 15.25; W. H., 15.50 @ 16.00, 15.50. We quote Silesian on the spot and to arrive, here, 27.50 marks; Silesian Sheet Zinc, 22.50; Zino, white, 23 @ 24; Light Gray, 25.50, and Dark ditto, 27.50.

#### SPAIN.

(“El Lince.”)

HUELVA (ANDALUSIA), April 18, 1879.—Lead.—According to all appearances, the price of Lead both in this country and the rest of Europe, will, for some time to come, remain steady on the basis of about \$4.40 per ton in the London market. At all events, at this figure producers seem prepared to go on supplying the markets and consumers to take the supply at the old price. Lead at this time seems cheap enough not to fear the competition of baser material. We are now able to furnish our readers from official data the actual production of Lead in Spain in 1877:

	Tons.
Linares and Cardova	37,000
Garrucha, Villarica, Palomares, Pozo de Esparto and Aguilas	20,000
Cabo de Gato, Almorla	5,000
Sierra de Gador, Betici	15,000
Cartagena, Forman, Herrerias and Escombreras	40,000
Asturias and Castuera	10,000
Total	130,000

REPORT OF SPANISH LEAD DIRECT TO THE UNITED KINGDOM.

	Tons.	1877.	Tons.
1880	17,737	1869	37,656
1881	19,483	1870	49,553
1882	20,813	1871	49,445
1883	25,347	1872	53,484
1884	33,706	1873	47,452
1885	27,474	1874	38,550
1886	31,071	1875	50,917
1887	35,051	1876	67,433
1888	37,429	1877	78,188

#### LEAD PRODUCTION IN EUROPE AND AMERICA.

	1860.	1877.
Tons.	Tons.	Tons.
Spain	90,000	130,000
England	100,000	61,000
Germany	15,000	86,000
Italy	35,000	20,000
France	15,000	18,000
United States	30,000	70,000
Other countries	15,000	15,000
Total	260,000	394,000

Average price of Spanish Lead (at London) £22. 6/3 \$20. 11/3

#### DISTRIBUTION OF USES.

	Per cent.	Pipe	Per cent.
White Lead	22	Other uses	22
Minium	10		6
Shot	10		10
Sheet Lead	36	Total	100

#### AUSTRIA.

(Austrian Trade Journal.)

VIENNA, April 17, 1879.—Iron.—The building season is now in full blast, and some large transactions in iron for architectural purposes have taken place. The demand for merchant iron is moderate. Prices are firm on the basis of the generally accepted price list. General trade presents no features of striking interest. Prices are on the whole well upheld, and in some lines an increased demand is manifesting itself, but the general aspect is a quiet one, the more so as speculators altogether abstain from touching anything pending the future of the silver coin. The value of the paper money and of the silver coin are at present equal; and according to the silver quotation at London, silver is at times worth considerably less than even our paper money, and there is no end of trouble. What means may eventually be resorted to to mitigate this evil, it is difficult to determine; finally, we presume Austria will have to introduce the gold basis by withdrawing the paper money, funding it, reducing silver to fractional currency, and coin is ing, for universal circulation, gold coin. But this will require time and sacrifices. If Austria did not possess the enormous material resources it actually has within its borders, the prospect before us would not be a bright one; fortunately we are a nation producing every variety of raw material, and at the same time are a great manufacturing nation in an unrivaled geographical position.

#### HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, April 17, 1879.—Tin.—There have been made some sales of Banca at 42.25 @ 42.50 guilders the 50 kilos, although for spot lots purchasers could not be found even at 42. The same thing relates to Billiton Tin, which is paid as high as 42.50 for August-September delivery, while spot lots are offering at 41.75 @ 42. Consumers buy sparingly, and the high price ruling in the work of more speculation. The 12,000 piculs Billiton Tin sold at Batavia for government account have brought, on an average, 45.98 guilders per picul, which is equal to 41.30 guilders the 50 kilos, laid down in Holland.

#### AUSTRALIA.

(Mining News.)

LAUNCESTON, TASMANIA, JANUARY 31, 1879.—Tin.—The Mount Bischoff Co. has raised during the year 1878, 2925 tons of Tin Ore. The Ore produced yields 67 1/2 % of Zinc (about 190 tons yielded 9 @ 71 1/2) and 1/4 the Ore is valued at the mine at £20 per ton. The low price of Tin in the London market is a matter of regret, but the labor-saving appliances now being used in Australia counteract that to a great extent by reducing the cost of production. The company smelt their own Ore and thus realize the maximum of profit.

#### EAST INDIES.

(Schmidt, Kusterman & Co.)

PENANG, March 10, 1879.—Tin.—Under the impulse of an active demand for England, prices have rapidly appreciated till they reached £2. Subsequently less exciting cable dispatches arrived, and the markets immediately dropped to \$10.57 1/2. Sales have aggregated during the fortnight some 65,500 piculs, 2800 of which for the United Kingdom and 2710 piculs for the United States.

#### INDUSTRIAL ITEMS.

##### NEW HAMPSHIRE.

The Concord Axle Works, at Fisherville, are now running up to their full capacity, working on orders entirely, and are turning out a large amount of the original Concord axles. The iron foundry connected with these works is also running on iron hubs, pipe boxes and machinery castings.

##### MASSACHUSETTS.

The Lenox Iron Works at Lenox Furnace are to be sold at sheriff's sale on May 10th.

##### RHODE ISLAND.

The Providence Gas Burner Company are actively at work getting ready to supply a large demand for their "Novelty" gas stoves the coming summer. The company also manufacture a large variety of gas burners, their latest specialty being a burner particularly adapted to gas made by the Lowe process. Of this burner one gas company alone has purchased over 52,000 in the few months since its introduction.

The Providence Tool Company are now engaged with a full complement of workmen, finishing a contract for rifles for the Turkish government, which will keep the men at work three to six months. They are also extensively engaged in manufacturing the Keat's sewing machine for leather work, and the household sewing machine for family use, as well as a large line of heavy hardware and shipbuilding goods, for which they will very soon issue a complete new catalogue.

##### CONNECTICUT.

The Pratt & Whitney Company, of Hartford, have made a paper-folding machine, invented by Marcus H. Rogers, formerly of the Berkshire Courier, and the first machine has just been placed in the press room of that paper. The machine takes the sheet from the fly of the press and delivers it folded, ready for mailing, without any expense or attention whatever for feeding or management, and only requires the changing of a belt to set it in motion or stop it. They have also shipped during the last month to Russia, for use of the Imperial Bureau of Engineering, engine lathes, a cutting-off lathe, revolving-head screw machines, drilling, tapering and milling machines, planes, screw plates, taps, &c., and have orders from another department of the Russian government for bolt-cutting machinery.

Since the assignment of the Hart, Bliven & Mead Manufacturing Company, Mr. J. T. Hart has given notice that all the workmen occupying his tenements will be required to pay only one-half the price formerly charged them for rents.

The main building, containing the machine shop and pattern rooms of the Pacific Iron Works, Bridgeport, belonging to P. H. Skidmore, was destroyed by fire on the 3d inst. The building was a two-story structure. It contained a large amount of valuable machinery. The loss is estimated at \$75,000; it is insured for \$100,000. The fire was probably of incendiary origin.

##### NEW YORK.

The iron works at Troy are all in active operation. Twelve hundred and fifty tons of steel rails are being produced by the Bessemer works weekly, and it is reported that additions to the extensive establishments of E. Corning & Co. and the Burden Works are soon to be made.

Beach & Co., of Ballston Spa, have obtained a contract to build 51 miles of railroad for the Poughkeepsie and Grand Junction Railroad Company, extending from the west end of Poughkeepsie Bridge to Port Jervis, on the Delaware.

The extensive real estate, buildings, blast furnaces, machinery, &c., of the Niagara River Iron Company, are to be sold on a mortgage foreclosure on the 20th of this month.

##### PENNSYLVANIA.

Ormsby Furnace, at Sharpville, in the Shenango Valley, was purchased on the 21st inst. by Mr. Simon Perkins, of Sharon, in connection with other parties outside of the valley, for the sum of \$20,000, and the intention is to put it in blast as soon as the necessary repairs can be made, work on which was commenced on the 22d ult. The furnace originally cost \$103,000.

Both furnaces at Orbesonia are in full blast, and laborers are in demand all the time. About a dozen houses are being erected. Coal and ore mining is going on briskly.

The Pennsylvania Company have 25 locomotives under way at their shops in Altoona.

Glamorgan furnaces, at Lewistown, are turning out from 250 to 300 tons of gray pig iron per week, according to the Gazette.

The stock of pig iron in the furnace yards throughout the Shenango Valley is lighter now than it has been at any time for five years past. The rail mill of the Allentown Rolling Mill was to be started up on Monday last. Orders have been received which will keep the mill steadily in operation for the next three months. With the resuming of work in this department of the rolling mill, all the departments will be in operation, the merchant and bar mills having been working steadily for some time past. This is the first time in a number of years that all the departments of the rolling mill have been in

operation at the same time, with a prospect of continuing for any length of time.

There is no prospect of the Valley Mill at Sharon starting this season. The company sell their pig iron faster than they can make it, and have no occasion to make it into blooms.

"Tubal Cain," in the Sharon Herald of the 2d inst., says: "For the week ending April 26th.—In Sharon, Atlantic Works red hot and more too. Puddle, guide, bar and both hoop mills double turn; 9-inch hoop mill working on Standard Oil Company's orders. This mill has not stocked two tons of iron for the last two months. At the Western Iron Works, puddle, guide, hoop and sheet mills double turn, bar mill single turn, plate mill, nail factory and spike machines on. Blast furnace No. 2 is about in the last month of the fourth year of its blast, and seems all right for another year, making a good average in everything. In West Middlesex, ten furnaces double turn. There has been considerable improvement made in this mill during the spring. From New Castle, the Etna mill and Sheet mill full time. Some of the departments double. The Etna nail factory working full time and behind its orders. The Topton Furnace, leased by Henry S. Eckert, of Reading, and Wm. M. Kaufman, of Sheridan, will go into blast this week.

##### PITTSBURGH AND VICINITY.

The Ax Factory at Beaver Falls will resume operations at once, with strong financial backing.

Work has been begun on the stove foundry of A. F. Wolf & Co., Beaver Falls. They are rebuilding on the site of the old works. The work will be done as rapidly as possible.

Anderson & Co., of Pittsburgh, will supply the material to J. Lloyd Haigh, who has the contract for furnishing 300 miles of wire rope to the New York Steam Cable Towing Company.

The suit of J. L. Lewis against several infringers of patents on rolling angle iron, which has been before the United States Circuit Court for a number of years, has been decided at Louisville in his favor.

Park, Brother & Co., manufacturers of steel, have recently established a branch warehouse in St. Louis.

A new chain works has recently been established on Railroad street, between 28th and 29th streets, by Messrs. Eisenbeis & Helm.

At Brown & Co.'s mill there is a chain-blank machine which takes the round rod, hot as it comes from the rolls, cuts it in lengths for chain links, and bends it into link form ready for heating and welding.

A new Swindell heating furnace, built for Carnegie Bros. & Co., is in operation and working very satisfactorily.

##### OHIO.

The Cleveland Window Glass Company, with a capital of \$50,000, has been incorporated.

John D. Wick and C. C. White are organizing a joint stock company for the manufacture of bolts at Youngstown. They take the old spike factory and remodel it for the purpose. The capital stock of the concern is to be \$25,000, of which about \$15,000 is already subscribed.

Belfort Furnace, Ironmont, is at present running on 3/4 Quinnimoto coke, 3/4 Connellsville coke and the remainder Kanawha coal.

Sarah Furnace is working on Kanawha coal and Fire Creek coke, making about 30 tons.

The Bloom Forge Iron Works, at Portsmouth, owned by the Gaylord Rolling Mill Company, have been leased by a new organization, to be known as the Portsmouth Iron and Steel Company. Mr. J. C. Lewis, so long at the head of the well-known Pittsburgh firm of Lewis, Dazell & Co., is president and general manager, and Mr. Geo. S. Lewis, secretary and treasurer. The other officers are the well-known Hanging Rock capitalists, John Means, John G. Peebles, John P. Terry and J. Scott Peebles. The mill will be put in operation at once. An open-hearth steel plant will also be erected. Mr. Lewis, the president, is one of the oldest rolling mill men in the country, and comes of a line of ironmasters, his father having been engaged in building the first rolling mill in the United States. He was also for some years the president of the Western Iron Association.

##### KENTUCKY.

The Norton Iron Works furnace was expected to be ready for fire about Monday, May 5. A new hearth has been put in, together with a new bell. The forge and nail factory are running full time, making their average number of kegs of nails.

Bellefonte Furnace's last blast, terminating on the 12th of February, resulted in a total make of 3280 tons of foundry iron, produced in 265 days on 153 bushels of charcoal and 3 tons of ore per ton of iron. On the 1st of March this furnace had on hand, unsold, 4961 tons of pig iron. This furnace now pays \$2.25 for iron ore, delivered.

Messrs. Snead & Co., of Louisville, have been awarded by the Treasury Department at Washington the ironwork for the roof, ceilings, cornices and crests for the United States Court House and Post Office at Little Rock, Ark. Messrs. Snead & Co.'s works are now in full operation and employ a large force of hands. They have recently completed and are now erecting the ironwork for the custom house and post office at Austin, Tex.

##### MICHIGAN.

Rumor has it that Eastern parties are negotiating for the purchase or lease of the Grace Furnace. There seems to be considerable foundation for the story this time, and it is not improbable that the negotiations may result in a relighting of the stack at no distant day.

Labor and Wages.—There was a strike last week of the gathering boys at Dillworth's glass factory, Pittsburgh, the boys demanding an advance of from 10 to 20 cents a day. Their demand was acceded to and the strikers resumed work.—The stone masons of Pittsburgh have decided to strike for \$2.50 p. r. d. y., the pay heretofore being from \$1.75 to \$2 per day.—An order has been issued that the men employed in the Pennsylvania Railroad shops at Altoona, numbering over 3000, shall commence

working 10 hours. Nine hours have constituted a day's work for 13 months past.—The Allentown Item says: "Skilled iron labor in the lower wards is not nearly as plentiful now as it was recently, and those men whose future was gloomy and uncertain last winter are now working for profitable wages, with bright prospects for the future."—The indications of trouble in the Pittsburgh iron mills on the 1st of June accumulate.—It was feared that the strike of the coal miners in the Clay County district, which began April 1, would culminate in a collision between the authorities and the miners. The operators and non-union miners have, however, in the last few days refrained from any attempt to resume work.

American Drill Rods and Compressed Steel Wire.—Until within a few months the successful manufacture of fine drill rods and compressed wire has been carried on exclusively abroad. Recently Messrs. Miller, Metcalf & Parkin, of Pittsburgh, have secured the exclusive control of the necessary machinery for the manufacture of these articles, and have succeeded in producing an article excellent in accuracy, finish and quality. They manufacture all sizes, from No. 60 to 1/4-inch, and have lately perfected machinery to finish sizes up to 1 1/2 inches. We believe these large sizes have never been produced, and it will certainly be of interest to manufacturers of fine machinery to know that this material can be obtained at home, without the delay attending foreign orders. The accuracy and finish required by the trade in this product, which must not be confounded with drawn wire, is surprising. The compression to which it is subjected perfects the finish and adds to the value of the fine steel from which it is made.

Important Decision.—On Saturday the Judges of the United States Circuit Court dismissed the appeals of the stockholders of the bankrupt Glen Iron Works Company, of Allentown. The stockholders in forming the company paid certain assessments on the stock, and acknowledged their indebtedness to the amount of \$111,000 for the balance of the subscriptions. The company subsequently failed, and the assignee, Mr. E. F. Wilbur, brought suit to recover this amount in the United States District Court. Judgment in some 43 cases was entered against the stockholders; of these cases 24 were appealed to the Circuit Court, and by the decision of Judges McKenna and Butler judgments have been entered against all of the stockholders to the full amount of the subscriptions due. It is probable that 12 cases will be appealed to the Supreme Court of the United States.

Railroad Reorganization.—The road formerly known as "The Buffalo, Corry and Pittsburgh Railroad" has changed hands, and will hereafter be known as "The Buffalo, Chautauque Lake and Pittsburgh Railway." The reorganization of the company has now been perfected and the officers are as follows: Archer N. Martin, president, Phila.; C. S. Hinchman, of Pennsylvania Steel Company, vice-president, Phila.; J. Kimball, of Lewis & Kimball, treasurer and secretary, Phila.; John L. Butman, superintendent, Mayville; Jos. W. Coke, general freight and ticket agent, Mayville.

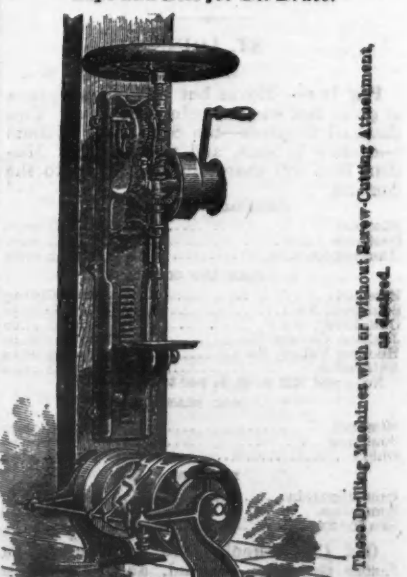
A movement has been started among the furniture workers to establish the eight-hour system. They point to its adoption as a good means of curtailing production, to which probably the manufacturers will not object, provided that the rate of wages per hour remains the same.

A railroad car laden with dynamite exploded in the Grand Trunk freight yard at Stratford, Ont., on the 5th inst. Two men were killed, and much property was destroyed.

A bill to establish a Bureau of Labor Statistics, is to be introduced in the House.

## Wiley & Russell Mfg. Co., Greenfield, Mass., LIGHTNING Screw-Cutting Machinery and Tools.

Bolt Cutters for Hand or Power, Tightening Screw Plates cutting 5000 Wires Sizes to 1-1/2 inch. Pipe Taps and Dies, Taper Reamers for Use in Bit Braces or Wood or Iron, Taps and Dies for Bit Braces.





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The EMERY WHEEL is the same size as the Stone, and double coated on the side and rim with best Wellington Mill Emery. When not in use, it is taken off and laid aside. A sponge is fastened in the side of the trough, to keep the Stone from throwing water when running at a high speed.

The Machine is run with a clutch, so that there can be no dead centers; but when the foot touches the treadle it starts off in the right direction, and runs at a very high or very low rate of speed, as desired. For grinding Carving Knives and all light tools, and for polishing Cutlery, this Machine is perfect. The legs are made to fold up for shipping, so as to occupy a small space. Weight, 25 pounds. Price, including box, \$3. It is for sale in MOST HARDWARE STORES in the country at our price, with a reasonable amount added for freight.

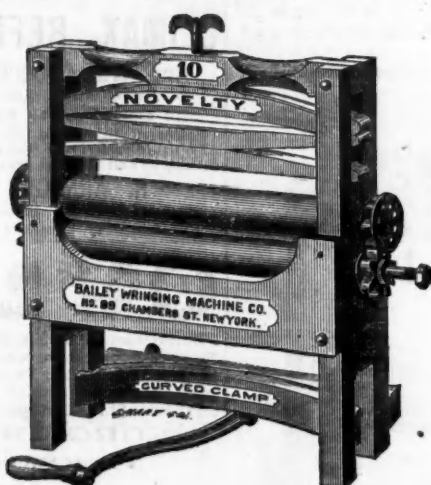
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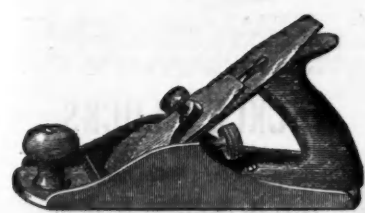
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These Cross-Ties have been in use since September 9, 1878, in a severe curve on the Philadelphia and Baltimore Central Railroad, with the most satisfactory results. The main features of this sleeper are:

1. It will save about one-half the labor.
2. It does away with all spikes, bolts, fish-plates, or joint straps.
3. It dispenses with drilling Bessemer steel rails, as every hole drilled is acknowledged to be an incipient fracture to the rail.
4. It will outwear twelve renewals of ordinary wood sleepers.
5. It has proved the most elastic sleeper in use, during all seasons.
6. It insures smooth and easy riding, with minimum wear and tear.
7. It was particularly noticed that it did not heave with the frost, while the wood ties that formed the connection with the iron ties, were heaved from 1 1/2 to 2 inches.
8. It will be seen that the more weight upon the rail the firmer it is held, with no possible chance of accident by the rails spreading.
9. It is a noticeable feature that the noise is much less, it being deadened by the elastic blocks which support the clamps.

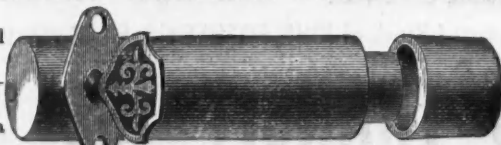
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**MY NEW DOOR BOLT,**

in Nickel plate or Bronze, is designed for both out and inside doors, your sleeping or bath-room, throughout a hotel, or on any door that may need inside Bolts. It will take the place of the more common Flush Bolt, being as easy to apply, leaving your door more secure and of better finish, and besides it fills the place of many a more expensive Bolt that operates no better or any more secure.

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[BRIGHT OR BLUED]



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Goodenough Horse Shoes, Caulked and Plain; Seeley Horse Shoes;

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## Scythe, Axe, Knife and Hacker STONES.

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Genuine OLD RELIABLE, INDIAN POND (Red End),

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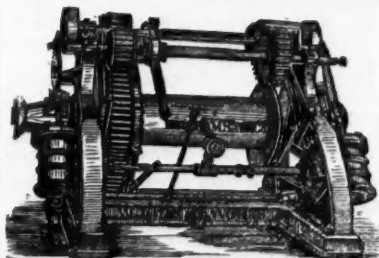
WILSON, WHITE MOUNTAIN, PREMIUM GREEN MOUNTAIN,

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Stones gotten up and labeled in any style desired.

PRICE AND QUALITY GUARANTEED. All the above Stones are of good

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GENUINE IMPROVED AND MECHANICS

## Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,  
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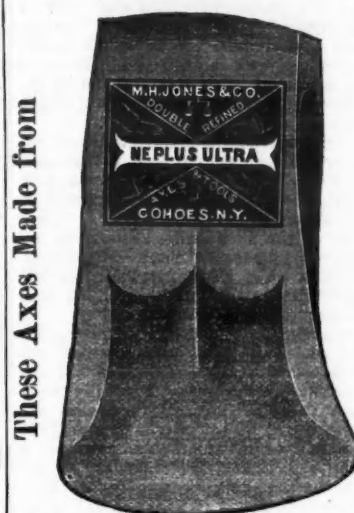
NOVEMBER 10, 1863,  
FEBRUARY 23, 1864,  
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Points Claimed as being Meritorious:

1. Lightness, combined with Strength in Construction.
2. Ease of Adjustment.
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10 inch.	A Child.	3 1/2 inch.	30 1/2 lbs.		\$14.00
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16 "	One Man Size.	3 1/2 "	38 "		23.00
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15 inch, 10 1/2 inch Driving Wheels, 6 1/2 inch Cylinder, Man Size, 48 lbs.	\$22.00
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No. 102 Chambers Street, NEW YORK.



[Continued from page 15.]

**The Iron and Steel Trades' Convention.**

sense permanent, while twenty-five years ago there was a violent reaction to high prices after bottom figures had been reached. Pig iron at \$18 per ton is cheaper than it ever was in this country since colonial days—far cheaper than it ever was under a nominal tariff. And why should not this have been the case? Its production in 1858 was 705,000 tons, while in 1877 it was 2,314,000 tons—the production under protection being about 3½ times what it was under a nominal tariff. In face of these facts, it is idle to talk of tariffs plundering those who impose them. If the tariff was swept away, we might have cheap iron and steel for a little while, until American competition was effectually "stamped out," and then up would go the prices. We would have to pay high rates for our goods, while we would have less money to purchase them with, and at the same time our laborers would be reduced to beggary.

Home manufactures have this also in their favor; they are suited to the wants, tastes and wishes of our people. This is a matter of moment. American goods of iron and steel are not only cheaper than foreign goods would be, but they are more tasteful in design and better in workmanship. They are our own. They are not forced upon us. And the very fact that other nations are learning how excellent they are, is proof that protection of American industries has been a direct benefit to the world. But for protection they would never have been manufactured, and the foreign iron and steel producers, in the quiet enjoyment of a monopoly, would have dropped into routine and made no attempts at improvement.

The building up of our home industries has been a direct benefit to the railroads of the country. And perhaps it would not be wide of the mark to assert that a considerable portion of the unexampled railroad prosperity which blessed the country for a number of years, was the direct and indirect fruits of protection, more particularly of iron and steel. The railroads obtained an increased tonnage by transporting the raw materials going to the production of these articles, as coal, iron ore, limestone, &c. The centers of manufacture and production are also centers of consumption. The railroads obtain increased tonnage in transporting the food and clothing used by those engaged in the manufacture. Even in the matter of travel, manufactures increase the number of passengers, visitors and purchasers. Every increase of this kind is a direct source of revenue. There is, however, still another way in which the protection of iron and steel has reacted favorably on the railroads. Steel rails are now sold at about \$10 per ton less than iron rails were sold for in 1860. Steel rails were sold at \$165 per ton in 1868; in December, 1877, they were sold at \$40 per ton, while the average price for the current year does not exceed \$44. Quantity for quantity, steel rails outlast iron ones from 15 to 25 times. The low price of steel rails has enabled our roads to be relaid with them, and the result has been a great saving in wear and tear. The operating expenses being reduced, rates for freight have been reduced also. The report of the Chicago and Northwestern Railway Company for 1878 shows that, while the movement of freight has increased over the preceding year 28.52 per cent., there was a reduction in freight rates of 7.53 per cent. In 1876-77 the rate per ton per mile was 1.86 cents, while in 1877-78 it fell to 1.72 cents. In 1871-72 the rate was 2.61 cents, while in 1872-73 it fell to 2.35 cents. A recent report of the Chicago, Milwaukee and St. Paul Railroad, shows that from 1865 to 1878, a series of 14 years, there has been a progressive reduction in the average price per ton per mile received for freights. In 1865 the price was 4.11 cents; while in 1878 it had fallen to 1.80 cents; that is, the present rate is less than 44 per cent. of what the rate in 1865 was. The report of the Hannibal and St. Joseph Railroad Company for 1878, shows that the rate per ton per mile was 1.295 cents. This is a material and progressive reduction over previous years. All these facts, and they might be multiplied many times over, show that during the last five or six years there has been a progressive reduction in freight charges, and this reduction is due primarily to the substitution of durable steel rails for iron rails not so durable, and at a figure much below what was at one time thought a very reasonable price for the inferior article. The effects of these great reductions in rates of transportation are as self-evident as they are advantageous to every class of our people. It is unnecessary to more than glance at the benefits which the whole people, but more especially the farmers of the West and Southwest, have received from the growth and extension of the domestic manufactures of iron and steel. The cheapening of the rates of freight is a direct benefit to them. Every cent saved on the cost of transportation is a cent in the pockets of the farmer. But this is by no means all. All kinds of tools and implements are now cheaper than they ever were before. The farmer can to-day buy the most approved ploughs, harrows, rakes, shovels, wheel-tires, springs, &c., at a much lower figure than a few years ago he could have purchased the most inferior articles for. This directly tends to the improvement of agriculture. Good tools do not make a good workman, but an inferior workman may be able to turn out better work with good tools than a good workman could turn out with inferior tools. Fencing is a large item in the farmer's expenses. By the substitution of durable and tasteful fences of iron wire for the unsightly and perishable board fences, this item is reduced to a very low point. Modern machinery has reduced the bulk of hay and straw by compression, and after they are "condensed" they are bound up with iron and steel wire or bands. In this way the cost of production is reduced, while handling is made easier.

A vote of thanks to Mr. Stone was promptly passed.

The Chair announced that a communication had been received from the United States Tin Plate Company, which Mr. Swank

would read. It was in substance as follows:

The articles which are commercially known as "tin and terne plates," are iron plates coated with tin or terne (a mixture of lead and tin) otherwise than by electric battery; the main substance (about 95 per cent.) of the same is iron, but although the present tariff law provides that "iron plates galvanized or coated with any other metal shall pay a duty of 2½ cents per pound," and that all manufactures of which iron is component of chief value shall not pay less than 35 per cent. ad valorem, these tin-plated plates are admitted at a duty of 1.1 cents per pound, or about 20 per cent. ad valorem, under the name of "tin in sheets or plates, and terne." To everybody acquainted with the process of manufacturing these tin and terne plates, it leaves no doubt that the originators of the present law intended the clause "Tin in Plates or Sheets" for the pure tin metal rolled or pressed into sheets or plates, and that tin plates (or, as they should be more properly called, "tin-plated plates") should pay duty under the provision, "Tin plates and iron galvanized or coated with any other metal otherwise than by electric battery;" especially inasmuch as also 2½ cents per pound harmonizes with the rates of duty imposed and collected on other shapes and products of iron, cost considered. (See Heil's tariff, page 59, provision 335, and page 166, clause 1052.)

When iron plates are coated with zinc or spelter otherwise than by electric battery, they are classed under the latter clause and pay 2½ cents per pound, but if the same article is coated with tin or terne by the same process, it is now admitted at 1.1 cents per pound.

This misconception of the law has caused for many years an annual loss to the government of about \$5,000,000, and has prevented the development of an industry, in which, if protected the same as other branches of the iron trade, at least 40,000 persons would ultimately obtain a livelihood, and through which about \$13,000,000 would be kept circulating at home, which we send abroad annually.

There are at present several firms in this country who have built and now operate tin plate works with great sacrifice. The plates that are manufactured in this country have preference with the trade, but under present circumstances it is impossible to manufacture without loss, and therefore a very important industry will be lost to this country, unless justice comes to the aid of those who have invested their capital in the undertaking.

The tin plate business represents an annual consumption of over 150,000 tons pig iron, and about 1,000,000 tons of coal, and about 50 rolling mills with two trains each are required to supply the demand for this article.

Had the tariff acts of 1864 and 1875 been correctly enforced, this immense business would now exist as a part of the resources of the United States. And in order that an immense loss of revenue may be saved to the government and a most important branch of the iron business be revived and developed, we most respectfully request your honorable body to at once instruct the Custom House Department to impose duty on tin plates, or iron plates coated with tin and terne, under the clause which provides that iron plates galvanized or coated with any other metal otherwise than by electric battery shall pay 2½ cents per pound.

Iron manufacturers believe that the development of tin plate making in the United States would tend quickly and powerfully to revive the whole business by creating a demand for the surplus product of pig iron. It will go far toward restoring prosperity to all interests, inasmuch as there can be no general prosperity while the iron trade is prostrated.

Mr. Shinn moved that it be referred to a committee on resolutions, to be appointed.

Mr. Kennedy asked if it would not be better to appoint a special committee to confer with all trades and collect data on ambiguities in the tariff. Having put a resolution to this effect it was carried.

Mr. Shinn moved that the Chair appoint a committee of nine to prepare an order of business, and the Chair named the following gentlemen: W. P. Shinn, S. P. Bowen, O. W. Potter, Oliver Williams, John W. Chalfant, J. J. Spearman, W. E. C. Cox, Thos. Grogan, J. D. DuBois.

The following were then appointed a committee on resolutions: Hon. Willard Warner, Hon. C. D. Hubbard, Messrs. Wm. Means, J. K. Moorhead, R. N. Gere, Henry McCormick, R. E. Blankenship, Cyrus Elder, Mark A. Hanna, R. T. Jones, H. S. Chamberlain.

The convention then adjourned until 2.30 p. m.

**Afternoon Session.**

The second session of the Convention was called to order at 3.15 p. m., Hon. D. J. Morrell in the Chair. Mr. Swank read a report from the Committee on Business.

Mr. Shinn, in behalf of the committee, explained that they had considered it their duty merely to formally bring before the Convention matters contained in the address of the Chair.

Mr. Elder said the committee on resolutions had been somewhat restricted by the resolution ordering their appointment, the Chairman considering that under it they could only consider resolutions coming from the meeting, and asked that their powers be enlarged so as to allow of their presenting resolutions of their own, which was done.

Pending the report of this committee, Mr. Swank made a statement of the receipts and disbursements of the American Iron and Steel Association, which was in effect as follows:

Annual receipts, chiefly from assessments and from annual dues of non-producers in the membership.....	\$10,000
Annual Expenses.....	
Salaries.....	4,000
Rent and janitor.....	900
Postage, &c.....	1,000
Bulletin.....	2,000
Annual report and directory.....	2,000
Traveling expenses.....	100
Printing and work connected with tariff legislation.....	1,500

The surplus funds in the treasury are exhausted, but the treasury is not wholly empty, as a little money still remains on

hand, but an immediate increase of resources is needed. Mr. Shinn asked what amount the association required annually; also, what proportion of the manufacturers of iron and steel contributed. Mr. Swank replied that the annual expenditures exceeded the amount received by \$1000 to \$1500. If the association had a regular income of \$15,000 to \$18,000 it would strengthen its hands and enable it to carry on its work more efficiently. Mr. Cox asked what was the weekly circulation of the Bulletin. Mr. Swank replied about 1200 copies. In answer to further inquiries, he said it would be unwise to change the present system of assessment upon the production of contributing firms.

Mr. Potter said that as a delinquent member, who had not paid his assessments, he would ask the privilege of the meeting for an expression of his views on the work of the association. Permission having been granted him, he read a long paper, which was listened to with much interest. He began by saying that to be an ironmaster now was much less a credit than it was five or ten years ago. It might be considered an impertinence on his part to suggest a means of remedying the evils which now afflict the trade, but, as the meeting had been open to free discussion, he would avail himself of the privilege of speaking plainly. With this introduction, Mr. Potter gave very fully his views as to the causes of the depression in the iron trade, and the methods of relief which to him seemed the most feasible, but, as it was expressly understood that his remarks were for the meeting, and not for the public, the press being requested not to give extracts from it, we refrain from reporting it.

Mr. Thomas replied to Mr. Potter with much warmth and force. It pained him to hear that workmen in any part of the country were in distress, but had not the employers divided unto them all they had? Capital had not earned interest for years, but had even suffered shrinkage in its own volume. So far as his own experience went, employers had made enormous sacrifices in the interest of labor which should not be lost sight of in such a discussion. Mr. Kennedy began by talking on the subject under discussion, but ended by making a characteristic greenback speech, in which he depicted the advantages to result from an unlimited supply of unexportable currency. His remarks occasioned much amusement, but did not lead to discussion.

Mr. Corus made some general remarks on the subject of protection, in the course of which he said if he had power, and it was necessary to the protection of American industry, he would make the tariff so high that nothing could get in or out of the country. He thought the cut-throat competition among domestic makers, however, was far more serious than foreign competition ever was or could be. If any good was to come of the meeting some plan must be adopted which would enable manufacturers to stop their present ruinous methods of doing business.

Mr. Williams made the brightest and most effective speech of the session. He said he had not come to scold, but to speak words of cheer and encouragement. In the East they were beginning to see the light. After a long night of darkness and distrust and danger to the iron trade, the morning had begun to dawn, and he would say to the Western ironmakers, be of good courage. During the past few months the East had done all in its power to strengthen the market, and he hoped the West would soon be in a position to heartily co-operate in the effort to advance prices.

Mr. Andrews—Do you get any more for your iron?

Mr. Williams—Yes, Sir; we get half a tenth, equal to \$1.20 per ton more than we did before the advance, and in spite of all efforts to break the market we have firmly adhered to the price, with all the orders we can fill.

Mr. Williams' remarks were received with great applause and did much to harmonize the meeting.

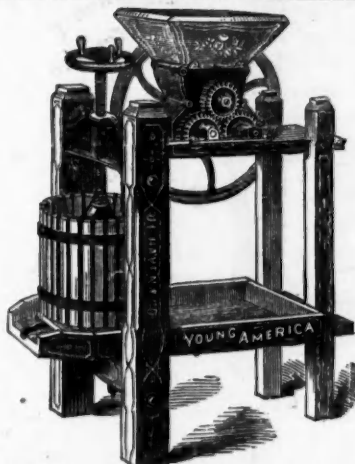
The Chairman of the Committee on Resolutions submitted the following report, which was read by Mr. Elder:

The manufacturers of iron and steel and miners of iron ore of the United States, in general convention assembled, express the conviction that the causes of the distress, which during more than five years has prevailed in all the walks of manufacturing industry, and has been especially grievous in the iron and steel trade, have spent their force; that the prolonged and apparently hopeless depression of business is past, and that there are signs of a return of healthy activity through which the country will again become prosperous. While all manufacturing countries have been alike sufferers, the condition of this country has been more tolerable, mainly because of the policy of protection, which has preserved a home market for the products of native industry. It is largely owing to this policy that our country is the first to recover from the blow which prostrated all industrial nations, and now begins to have confidence in the future, while free trade is still paralyzed and despondent. The policy of protection has given to the United States an iron and steel industry which ranks the second in the world. In this art of arts our country has developed, within a comparatively few years, a proficiency which it has cost other countries centuries to attain, and has made inventions and improvements which are honors to its artisans and benefactions to the world. The iron and steel industry of the United States can no longer be approached as local or sectional, for under the moderate protection it has received during the past 15 years it has become widely distributed; its processes are conducted in most of the States, and its materials are drawn from all parts of the Union. It affords agriculturists a profitable market, the carrier remunerative traffic, and it creates and sustains a multitude of allied and dependent industries. It has made this country practically independent of foreign sources of supply of the principal means of national defence, and is winning a way for itself in the markets of the world. It has cheapened railroad materials, and thus promoted commerce throughout a vast extent of our country, and it has so improved these materials that traffic and travel have been rendered speedy, and there is a practical immunity from accidents. It affords employment to a multitude of workmen who otherwise would become tillers of the soil, and swell the surplus of farm products, or menace idleness, burden themselves, and waste society. The promoters of this industry, under conditions which, when favorable, have always lacked the quality of permanence, have had to take large risks. Their labors have been great and profits far from adequate. The prospects are not now so promising as to invite the new adventurers; yet to those who have means invested in it, the present situation, if there was the assurance that it would be maintained, offers a motive for renewed exertions and the promise of moderate success. Under conditions of freedom from destructive foreign interference, home competition has been evolved which reduces profits to a minimum, and requires the utmost skill and economy and constant effort to make improvements in the machinery and processes.

What is thus claimed for the iron and steel industry is also true of other manufacturing interests of the country. They also owe their marvelous development to the policy of protection. They have endured their full measure of distress during the era of depression, and they are slowly but surely emerging from it, strengthened by its trial, and preparing to revive and advance the prosperity of the country. Owing to the tariff there have been no such scenes of suffering in destitute communities here as have been witnessed abroad. Owing to the tariff there has been no suspension of our industries which otherwise would have been general. Owing to the tariff our home markets are fully and cheaply supplied with all manufactured products. Owing to the tariff, more than to any other cause, we are no longer a debtor nation. The balance of trade has been and is steadily in our favor. Gold has ceased to bear a premium, our bonds are returning to us, and will not draw away our money for the payment of interest to foreigners, and the credit of the government has become so assured that the public debt is readily refunded at a lower rate of interest in bonds that are sought for by our own people.

We pronounce the situation hopeful. Hard as the conditions of our industries have been, and are still, we believe that we have fairly outworn the severest stress. We do not claim sympathy, though we may deserve it. We do not ask for aid, for we have courage to help ourselves. The substance of what we request from our government may be briefly expressed. Do not now open our ports to the products of foreign labor, for the certain result will be to close many American mills and factories, and take away the bread of American workmen. Do not check the healthful progress of our export trade and disturb the wholesome condition of our exchanges with foreign countries. Refer the subject of tariff to a small and carefully chosen commission of legislators and business men, who alone should be empowered to submit to Congress any proposed alteration in our Tariff laws, after consultation with the interests to be affected by them. Refuse to entertain overtures for so-called reciprocity treaties upon the ground that they invade the right of the lower house of Congress to initiate all financial legislation; that they are adverse to the interests of the people and of public revenue, and contrary to the genius of our free government.

The report was adopted. This was followed by some desultory talk, chiefly from gentlemen present who were called upon. The most interesting of these were the remarks of Gen. J. K. Moorhead. He made a strong tariff argument, and although showing many of the infirmities of age, exhibited much of the fire of youth as he warmed to the discussion of this congenial theme. Mr. Andrews made a pleasant speech, and after votes of thanks to the press and Mr. Morrell, the Convention adjourned.



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Will sell at a great bargain the patent right for the AMERICAN CIDER MILL (so well and favorably known), for all the New England States, also New Jersey, Eastern Pennsylvania, Delaware, Maryland, District of Columbia, Eastern Virginia, North Carolina. Will furnish full set of patterns for large and small mill, also power mill. For full particulars send for circulars. Address, SAMUEL MALES, 96 Everett St., Cincinnati, Ohio.

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For every possible duty. Special Pumps for deep wells, any size or capacity. Pumps and Boilers for farms and suburban residences erected complete; any farm hand or house servant can operate them. Pumps to work with exhaust steam, guaranteed to put no back pressure on the engine. Special Pumps of large capacity for wrecking, irrigation or drainage. Also, Air Pumps and Air Compressors.

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GREAT REDUCTION IN PRICES.

**CLIMAX REFRIGERATOR**  
And Water Cooler Combined.  
Patented Dec. 2, 1873, June 1, 1875.  
No Drip Pan to Soil the Carpet.

Self-purifying, Cold, dry and pure air. Inner case made entirely of galvanized iron. Send for catalogue and reduced price list.  
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**GEORGE W. BRUCE,**  
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Agent for CLEMENT & MAYNARD'S Trowels, Hoes, Shovels, Spades and Scoops. Their Trowels and Hoes have entirely supplanted the English by their quality and cheapness, while all their goods compare advantageously with those of other makers and are largely exported.

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Rope and Iron Strap of all kinds. Lignumvitae Wood for Ten-Pin Balls.  
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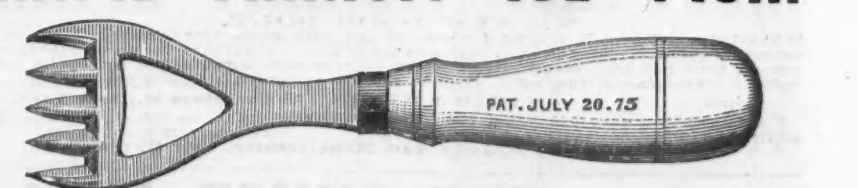
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Removed to 30 Gold Street, New York.

Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS, TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for CLOCK SPRINGS, CORSET CLASPS, &c.

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**RAPID TRANSIT ICE PICK.**



The above Ice Pick is made of the best Malleable Iron; the points are finely ground. They are also nicely Tinned, which prevents them from oxidizing, and are one of the cheapest and most saleable Ice Picks offered to the trade.

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Manufacturers of SAND & EMERY PAPER & EMERY CLOTH.  
(Also in Rolls, for machine work.)

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## Weeks' Patent Scale-Beam.

We give an illustration of a new form of solid scale-beam which promises to be of considerable value to those using scales. The improved beam is manufactured by the Weeks Scale Works, 562 Washington street, Buffalo, N. Y. The Dearborn beam, a scale without a platform, largely used in many places because of its accuracy, easy portability and convenience, has the great difficulty of a diversity of weights and great length if large loads are to be weighed. The improvement consists of a solid beam divided into two, three or more scales, and having a separate riding-weight or poise for each one. An index in each poise indicates the position of the weights in the usual manner. This construction is very clear from the engraving. The outer poise, when slid out upon the beam alone, indicates weight upon the upper scale. When the weight exceeds the amount which this weight will indicate, instead of being obliged to add loose weights, calculate their amount and add it to the reading of the beam, it is only necessary to bring the first and second weights together, or all together, and, running them out, balance the beam and read the weight from the weight with the lowest opening. The lines of figures on the beams form a progressive series, and when all three of the weights are at the end of the beam, the figure shown indicates the full capacity of the scale. Each poise covers all the figures except those in its own line, so that there may be no confusion. In the ordinary beam, 50 inches long, it is not practicable to weigh more than 500 pounds in 1 pound marks. In the Weeks beam the first line reads up to 500

were sent. At the same time the guano facilities of Peru were destroyed, in consequence of which there were no means of providing for the payment of the interest of the bonded debt of Peru. Her trade, too, is disorganized, for if merchants cannot buy a bill of exchange, they cannot make purchases of goods.

As the case stands, Chili is better off than her rival, for she can export silver and copper (her ports not being blockaded), and remittances can be made in bills of exchange drawn against these products. Most merchants in New York have ceased making shipments, except of merchandise useful in war, such as provisions and military supplies, as above mentioned.

Chili does not seem to have waited for a formal declaration of war. It is evident that she considered hostilities inevitable, and proceeded without delay to take the aggressive against both Peru and Bolivia, blockading ports all along the coast. Great enthusiasm is manifested all over Chili, and as there is no probability that the Argentine Confederation will be drawn into the broil, it is believed she will be able to defeat her adversaries.

The trade of the belligerents with the United States must necessarily almost wholly cease while war continues. Chili being more under English influence, her copper bars and nitrate will go to Europe; also her wheat and silver, which in no case would find a market here. Her remittances, however, are in bills on London, drawn against shipments to that destination. Chili and Peru each have a trade with the United States in time of peace amounting to some \$3,000,000 or \$3,500,000 per annum.

Our informant says we shall yet hear of

40 parts of white wax and 10 parts of tallow; for blue: 10 parts of Prussian blue, 20 parts of white wax, and 10 parts of tallow; for dark blue: 15 parts of Prussian blue, 5 parts of gum arabic and 10 parts of tallow; and for yellow: 10 parts of chrome yellow, 20 parts of wax and 10 parts of tallow. The ingredients are mixed, finely ground, and are then dried. They are shaped into small round sticks in the same manner as lead pencils by means of hydraulic pressure, are dried again, and finally glued into wood pencils.

After a delay of many months the letters patent for

## EDISON'S ELECTRIC LIGHT

have been issued. The principle involved in the construction of the lamps is the same described in the specifications published some time ago in England, and noticed by us in *The Iron Age* of March 13. While the construction of the apparatus is certainly very ingenious, and makes incandescence lamps of greater practical value, we fail to see any grounds for the enthusiastic prophecies and solemn warnings to gas companies indulged in by the *Herald*, the question of cost not yet being a settled matter. The two patents were applied for on the 14th of October and the 18th of November, 1878, respectively, and were granted on the 22d of April, 1879. Both relate to the automatic regulation of the electric current passing through incandescent conductors, with the object of preventing the temperature of the conductor rising to such a degree that there is danger of its fusing. This regulation he effects by various means, the one in his first patent being virtually that described in the English specification, based upon the expansion of a coil of wire. The second invention consists in causing the heat generated by the incandescent conductor to expand the air or fluid in the containing chamber as its temperature rises, the pressure thus created serving to move outwardly a yielding material—such as a diaphragm—which, in its turn, serves to control the passage of the electric current through the incandescent body by means of contact points or circuit regulators, and thus the temperature of the incandescent conductor will be regulated automatically. Mr. Edison describes one method of applying this principle, and adds that it may be used in many ways. The incandescent conductors are made by him of iridium, platinum or other metals of this group, which fuse only at very high temperatures.

Elements are multiplying rapidly. Mr. Wilson is responsible for the last addition, SCANDIUM,

which he has obtained from the mineral gadolinite. Its atomic weight is said to be between 100 and 180, which would give it a position between tin and thorium.

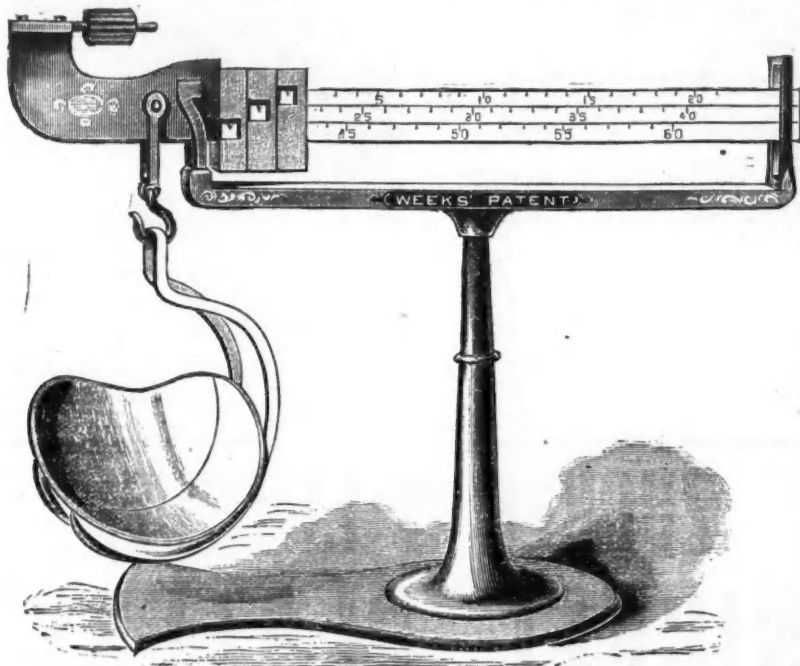
John Baird, chief engineer, and Allan Stirling, master mechanic, of the Metropolitan Elevated road, have obtained a patent for

## OBVIATING THE NOISE OF ESCAPING STEAM.

The devices are an expansion chamber and an annular nozzle placed in the locomotive chimney, the effect of which is to produce a regular noiseless escape of steam, instead of an intermittent and sonorous one as at present. The steam from the cylinders, instead of passing directly through nozzles, is discharged into a chamber of ten times the capacity of the cylinders, which will allow the steam to expand in volume and greatly reduce its pressure, so that the noise of puffing will not be heard more than 10 feet away. Mr. Baird claims that this appliance also gives greater speed, with a considerable saving of fuel. He also claims that by the application of an English patent the hissing noise of the sudden escape of steam from the brake ejector, when trains are approaching a station, will be obviated. This improvement consists of a cylindrical chamber with wire gratings at each end, the cylinder being filled with small glass beads, about an eighth of an inch in diameter, with a hole in the center. The steam, in passing around and through them, is subdivided into so small parts as to utterly destroy its power for producing noise. It requires about 75,000 beads for each cylinder, and the company has purchased about 800,000 of them. It is estimated that it will require several millions to equip all the locomotives in use on the road. These novel improvements have been applied to three of the engines, and they will be put on all the engines as soon as possible.

**An English Workman on American Nails.**—An English workman thus testifies in the *English Mechanic* to the good quality of American wares: "But I speak of things which I know thoroughly well, when I say that in very many things our manufactures are not fit to be shown in the same street with American ones; and this is not merely in knick-knacks or little ingenuities, as to which it is tolerably evident we have no pretension to enter into any comparison. I only invite any one who doubts my statement to compare such a rough common matter as 'cut nails.' Our rubbish, with half of them split up, which tend to turn round in the wood and split it, and with conical heads, look very poor against the straight, clean nails, with well-formed heads, which the Americans used to send out to Australia, and which, when I had once seen them, prevented me from ever buying an English nail again as long as I could get the American ones."

**Bessemer Steel for Cutlery.**—The Sheffield correspondent of the *Engineer* states that efforts are being made in the Bessemer trade to bring out special makes of Bessemer steel for cutlery purposes. These makes are now varied to any given temper. Up to this time the greatest obstacle in using Bessemer for cutlery purposes has been the variations of temper—each rod almost varying so as to cause great difficulty in the hardening. This difficulty has been overcome by the making of specialties, which are offered for even less than what is charged for rail ends, £5. 5/ in ingots, as against £9 for "cast." It is said that the Bessemer at £5. 5/ is considered equal to the "cast" at £12.



WEEKS' PATENT BEAM FOR PLATFORM SCALES.

pounds, the second to 1000 pounds and the third to 1500 pounds, precisely as though the first poise was used upon a beam 150 inches long. It thus has the double advantage of making a short beam equivalent to a long one, and of doing away almost entirely with the use of loose weights, and the consequent mistakes and annoyances. These beams are applicable to all kinds of scales in which a beam with sliding weights is used.

## Mercantile Effects of the War Between Chili and Peru.

A member of a prominent New York firm, who has made frequent visits to the west coast of South America, has favored a representative of *The Iron Age* with a brief, but comprehensive and truthful, description of the state of affairs, politically and commercially, so far as concerns the respective belligerents, remarking that the published accounts usually convey a very erroneous impression. He recapitulates the circumstances leading to hostilities, speaks of the relative strength and resources of the combatants, and predicts much bloodshed before peace can be restored. Between the governments of Chili and Peru there has existed an intense rivalry. They are about equal in the forces at their command. The navy of Peru is the larger, but that of Chili is more effective. The Chilean army is in fair condition. Powder in large quantities has been sent from New York, also arms to some extent. Chili was provided with these previous to the final rupture, and she can turn out and equip 200,000 men. The Peruvians may have equal numerical strength, but it is not homogeneous. The Chileans, on the other hand, are "the Yankees of South America," and their country is the California of the Southern hemisphere, similar in climate and all other characteristics. Between their boundaries is interposed a narrow strip of Bolivian territory, formerly believed to be utterly barren and worthless, except as it gave Bolivia three ports, of which Cobija is the most important. But since the boundaries were arranged there have been three important discoveries in the intermediate strip. First, it proved to be rich in silver, with Antofagasta for a port. Following this was the discovery of guano deposits, not as rich as those of Peru, but valuable. Finally, there were found immense deposits of nitrate of soda, used in fertilizing, of which Peru previously held a monopoly, the government having bought out all the companies working the beds. Thereupon Peruvian influence was used to induce the Bolivian government to interfere with the free export of this commodity. It so happened that these three products of the desert were developed mainly by Chileans, and when Bolivia took action, levying a tax on the nitrate works contrary to treaty stipulations, the former appealed to their government for protection. Troops

## Scientific and Technical Notes.

A remarkable invention, recently brought out in England is

## COWPER'S WRITING TELEGRAPH,

which, unlike previous autographic systems, does not depend upon electro-chemical decomposition. A pencil is moved at the sending station, and at the receiving station a pen charged with ink describes the same movements. The sending apparatus consists of a pencil under which a continuous band of paper is drawn by clockwork. Attached to the pencil are two light rods placed at right angles to one another. When the pencil is moved, the curves made in forming the various letters cause the ends of these rods to make a series of lateral and longitudinal movements. These ends of the rods pass over the ends of a bundle of brass plates, connected each with a resistance coil, so that their movements over them transmit to the distant station currents of varying intensity. These are utilized at the receiving station in the following manner: There are two strongly magnetized needles on delicate bearings, forming movable cores in coils, which are placed between the poles of four permanent magnets. These magnetized needles are also placed at right angles to one another. Fastened to the point of each is a thread, and these two threads cross one another and are knotted together at the point of intersection. At this central point they carry a tiny pen, consisting of a glass hair-like tube of syphon form, its upper end dipping into a little cistern of limpid aniline ink. A traveling slip of paper passes slowly beneath this pen, and as it moves a straight line of ink is drawn upon it. But directly the operator at the sending station begins to write with his pencil, the varying currents thus caused, in the manner indicated, impart varying degrees of strength to the magnets surrounding the needles. The needles are consequently endowed with movements of greater or less amplitude. The crossed threads are pulled by the moving needles, and the curves of the written letters are reproduced by their combined action. By this machine the question of sending autographic messages, so important in many government and commercial affairs, has been solved in a simple and ingenious manner.

The famous lead pencil manufacturer, L. Faber, at Stein, near Nuremberg, Germany, has patented the following

COMPOSITIONS FOR MARKING ON GLASS, PORCELAIN AND METAL.

For black he uses: 10 parts of lamp black,

## SPRING HINGES

WITH

## Patent Anti-Friction Springs, FOR SCREEN DOORS.

PRICE LIST.—Per Dozen Pairs.

## SINGLE JOINT HINGES.

(To Swing one way.)

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2½ inch.....	\$ 3 00	\$ 4 50	\$ 5 00	\$ 6 50
3 ".....	4 50	6 50	6 75	8 75
5 ".....	7 50	10 00	10 00	12 50

## DOUBLE JOINT HINGES.

(To Swing both ways.)

To be used on Door 1 inch thick, or less.

SIZE.	WITHOUT ACORN TIPS.		WITH ACORN TIPS.	
	BRASS.	NICKEL PLATED.	BRASS.	NICKEL PLATED.
2½ inch.....	\$ 6 60	\$ 9 00	\$11 00	\$14 25
3 ".....	8 30	11 50	13 50	17 00
5 ".....	16 50	21 00	21 50	26 00

The large cut represents full size of our 5-inch Double Joint Acorn Tip Hinge for mortising. The small cut represents the plain Single Joint Hinges, but not full size. Sample pair will be sent by mail on receipt of price.

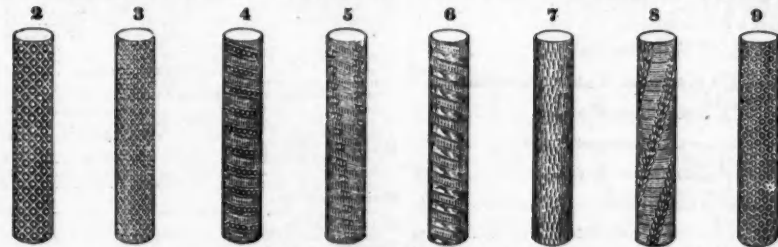
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## Ornamental Steel and Iron Wire.



Chasing Designs.

We hereby wish to call your attention to our

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and to the following advantages of it over Ornamental Tubing, &c.: The price being one-half to three-quarters less, while its strength is double and its finish much superior, adapting it to an infinite variety of purposes, for many of which Tubing would not answer. We are now prepared to furnish the Embossed Wire or Rod, either Plated or not, by the bulk, or cut up in desired lengths, with or without fancy ends turned on, as Acorns, &c., or bent to suit. We are manufacturing the stock up into many articles, which we have for sale, some of which are Stair Rods, Pokers, Towel Rods and Foot Rails for Stoves, Baggage Bracket Rods for Railroad Coaches; also, Knife Rests, Napkin Rings, and Nut Picks, most of which are already well known on the market. Please give the matter careful consideration; and is there not a chance for you to improve your goods—thereby increasing their sale—by the use of this wire? We would be pleased to send you samples, and quote estimates on anything in this line, and feel confident we can please you.

HERKIMER, NEW YORK.

## SIMPSON &amp; GAULT, (Peerless Wringer Co.)

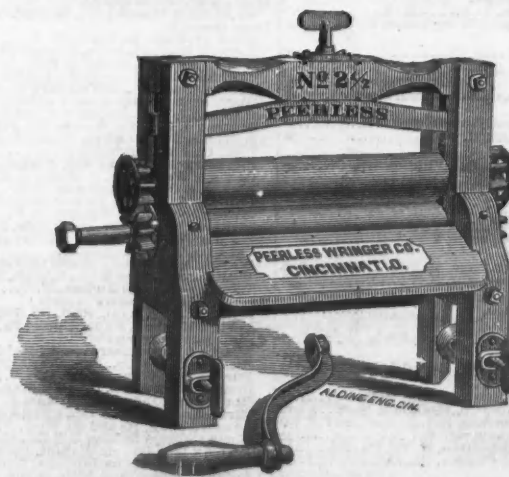
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## PEERLESS CLOTHES WRINGERS,

Sold by the Jobbing Trade everywhere.

No Better in the World.



Strongest and Handsomest.

Most Saleable Wringer in the Market, TRY A SAMPLE ORDER.



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STEEL and FILE WORKS,

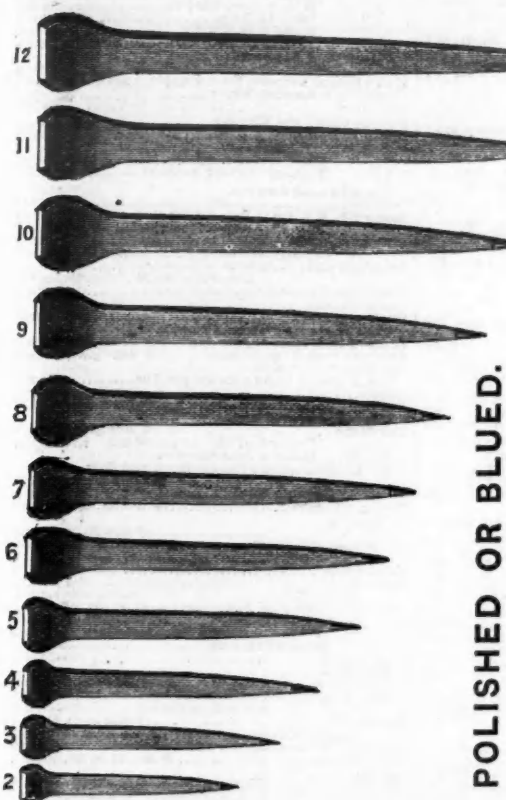
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SAWS OF ALL KINDS, FILES AND TOOLS, AND SPECIAL GOODS MADE FROM SHEET STEEL.

All goods stamped Henry Disston & Sons, and bearing our trade mark, are fully warranted.

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Branch House, Randolph & Market Streets, Chicago, Ill.



## AUSABLE HORSE NAILS,

Twisted, Bent and Drawn  
COLD.

Hot Forged and Cold Hammered Pointed,

Are the only Nails in market that are made in imitation of the Hand Process. They have the uniformity of Machine Nails and the toughness of those hammered by hand. Our

### HOT FORGED AND COLD HAMMERED POINTED NAILS

Are the Standard Nails,

and are acknowledged to be the best in the market. They are used by the best shoers in New York, Brooklyn, Philadelphia, Chicago, Saint Louis, Milwaukee, Baltimore, &c., and

GENERALLY THROUGHOUT THE UNITED STATES.

They also compete successfully in Foreign Countries with machine and hand-made Nails of their own manufacture.

AUSABLE HORSE NAIL CO.,

4 Warren St., New York.



Steam and Frost prevented on Show Windows.



### REVOLVING VENTILATORS

For everything (and every size), from a hat or cap to an exhibition building.

Kitchens, Laundries, &c., ventilated without draft. Durable, strong, without rivets or solder. Oiled for six months. Each one has storm cap. Retail price, also six inch diameter, \$2.00 and upwards; apparatus with which any one can cut circles in glass, 15 cents each.

Protective Ventilators avoid drafts, exclude dust, dampness, malaria and germs of disease; adopted by hospitals, schools, institutions, &c.; applied to any window or room.

Prof. A. L. Loomis, M. D., University of City of New York, writes as follows:

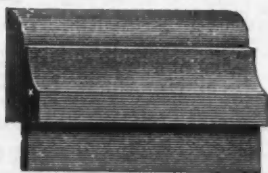
"From my personal experience and that of my patients who have used your Ventilator during the past six months, I am convinced that your method of removing dust, impurities and dampness from the atmosphere is the best which has as yet been proposed. By it the air in an apartment can be constantly changed without causing drafts. I would especially recommend its adoption in sick rooms, sleeping apartments, nurseries and school rooms."

Air Filters and Moisteners, placed over hot-air registers of furnaces, &c., prevent dust and supply steam filtered air. Prices and discounts to the trade sent on application.

The "Economy" Molding Weather Strip is perfect in every respect. By enlarging edge of rubber or felt, and making slot in molding to correspond (see engraving), we save all after expense of molding. Once purchased it will last a lifetime, because rubber, etc., has only to be removed by taking old piece out of either end of molding, and sliding in a new piece. By this method of securing rubber all uncertainty of fastening or undoing of glue or tacks is overcome.

Rubber supplied with enlarged edge and instructions to enable Car Manufacturers, Carpenters, Builders and far off trade to make slots in Sashes, Doors, Moldings, &c., and thus make perfect Weather Strips.

No. 6,



BRACHER VENTILATOR CO., No. 3 Park Row, New York.



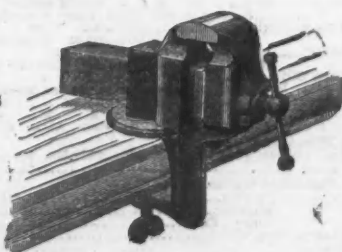
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AMERICAN  
Meat and Vegetable Chopper.  
Special quotations for export.

MANUFACTURERS  
OF THE



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Adjustable Parallel Vise.  
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### COACH SCREWS

(With Gimlet Points),

ALL KINDS OF

Machine and Plow Bolts,

FORCED SET SCREWS,

AND  
TAP BOLTS.



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Quartz, the Finest, Whitest, Best.  
Kaolin, Asbestos and Baryta.

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### PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal.

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MINES: Lehigh Valley, Pa. WORKS & FURNACES: Bergen Port, N. J.  
The only Miners and Manufacturers of

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From Lehigh Ore.  
Warranted free from any trace of Lead, and specially adapted for

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Superior for LIQUID PAINT on account of its bod and wearing properties.

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ESTABLISHED - 1856

Warranted Genuine

Cucumber Pumps & Pipe. Also Popla

Pumps, Lined Pumps, &c.

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Machinery.

IRON AND BRASS CASTINGS,  
Pulleys and Shafting.

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Waterford, N. Y. (four miles from Troy).







Glass.  
FRENCH WINDOW GLASS.  
*Prices current per box of 50 feet.*

Single Thick.—Discount 6&1&2%.				
SIZES.	1st.	2d.	3d.	4th.
X 8 to 10 x 15.....	\$ 8.00	\$ 6.75	\$ 6.25	\$ 5.75
X 14 to 16 x 24.....	8.75	8.20	7.50	7.00
X 22 to 24 x 36.....	11.25	10.50	9.75	9.25
X 26 to 28 x 36.....	12.75	11.50	10.50	10.00
X 26 to 28 x 36.....	13.50	12.25	11.25	10.75
X 26 to 28 x 46.....	14.75	13.75	12.75	12.25
X 26 to 28 x 56.....	15.25	14.00	13.00	12.50
X 26 to 28 x 56.....	17.25	16.00	15.00	14.50
X 26 to 34 x 56.....	18.75	16.75	15.00	14.50
X 26 to 34 x 60.....	19.13	18.00	16.00	15.00
X 26 to 40 x 60.....	21.00	19.50	18.00	17.00

**Double Thick.—Discount 70 to 70&1&2 %**

SIZES.	1st.	2d.	3d.	4th.
X 8 to 10 x 15.....	\$12.00	\$11.00	\$10.00	\$ 9.25
X 14 to 16 x 24.....	14.75	13.75	12.75	11.75
X 22 to 24 x 36.....	19.00	17.75	16.00	15.00
X 26 to 28 x 36.....	21.50	19.25	18.50	17.50
X 26 to 28 x 36.....	23.00	20.75	18.25	17.25
X 26 to 28 x 46.....	25.00	23.00	19.25	18.25
X 26 to 28 x 56.....	27.00	25.00	21.25	20.25
X 26 to 28 x 56.....	28.50	26.00	22.25	21.25
X 26 to 34 x 56.....	30.00	27.75	24.75	23.75
X 26 to 34 x 60.....	31.75	30.00	27.00	25.00
X 26 to 40 x 60.....	35.00	32.50	30.25	28.25

Sizes above 40 x 60—\$10.00 per box extra for every  
feet inches.  
An additional 10 per cent. will be charged for all  
sizes more than 40 inches wide. All sizes above 42  
inches in length, and not making more than 48 united  
feet, will be charged in the United States bracket.

**Sandries.**

phatum.....	08
nine.....	7 gal, 60
alk.....	10
Brock.....	30
yer, Patent, Am'n.....	ass't cans, 10&1&2 keg, 60
ostings.....	60
go, White.....	33 @ 40
Sheet.....	20
asiers' Points, Zinc.....	50
m, Copal.....	50
Damar.....	50
Shellac, English.....	30
Charge, English.....	00 60
eral Wod.....	P B 14 @ 150
medal Wood.....	50
mic Stone, selected Lamp.....	4 @ 50
powdered.....	240
ty, in bladders.....	240
in bulk.....	30
tten Stone, soft, English.....	80
rtes Turpentine.....	30
iting Spanish.....	30

---

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## ery Manufacturer

### MERCHANT,

# MOVED

## S STREET,

## ORK.

## HAMPION "

# Freezers.

### SIZES.

3 Quart Geared.	16 Quart Fly Wheel
4 " "	20 " " "
6 " "	32 " " "
8 " "	40 " " "
10 " "	" " Frame.
12 " "	40 " " "
16 " "	
20 " "	

Two 20 Quart Duplex.

**Not the Cheapest, but the Best.**

Send for illustrated Price List.

Address Sole Manufacturers,

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**BUFFALO, N. Y.,**

OR

**CHICAGO, ILL.**



Patented Nov. 24, 1876; Feb. 6, 1878.

## PATENT STEEL TUBE AND FLUE BRUSH.

Manufactured and for sale in the

## L. B. Flanders Machine Works,

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Descriptive circular on application.



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**MANUFACTURERS OF MORE THAN 4000 VARIETIES OF PRODUCT,  
AND INCREASING THE ASSORTMENT DAILY.**

Machinery employed contains important inventions recently patented, and which are designed to produce Screws at a lower cost to the consumer than has ever been attained.

All goods are distributed through the Hardware trade, to whom a liberal discount will be allowed.

## INTERNATIONAL EXHIBITION.

PHILADELPHIA, 1876.

No. 235.

The United States Centennial Commission has examined the report of the Judges, and accepted the following reasons and decreed an award in conformity therewith.

PHILADELPHIA, November 8, 1876.

### REPORT ON AWARDS.

Product: Iron, Brass and Steel Screws, Tire and Stove Bolts, Rivets.

Name and address of Exhibitor: American Screw Company, Providence, R. I.

The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for Award, for the following reasons, viz: Being of a quality nearly approaching perfection, showing the highest attainment in this branch of manufacture.

G. L. REED, Signature of the Judge.

Approval of Group Judges.

Daniel Steinmetz,  
Jas. Bain,  
Chas. Staples,

G. L. Reed,  
J. D. Imboden,

J. Diffenbach,  
Dav. McHardy

A true copy of the record. FRANCIS A. WILKES, Chief of the Bureau of Awards.  
Given by authority of the United States Centennial Commission.

[L.S.] J. L. CAMPBELL, Secretary.

A. T. GOSHORN, Director-General.  
J. R. HAWLEY, President.



After forty years' experience we offer to the trade our Centennial Screws, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at the same price as the old style screw.

The new screws will be packed in manila colored boxes with the new label covering end of box, and enlarged figures showing plainly contents.

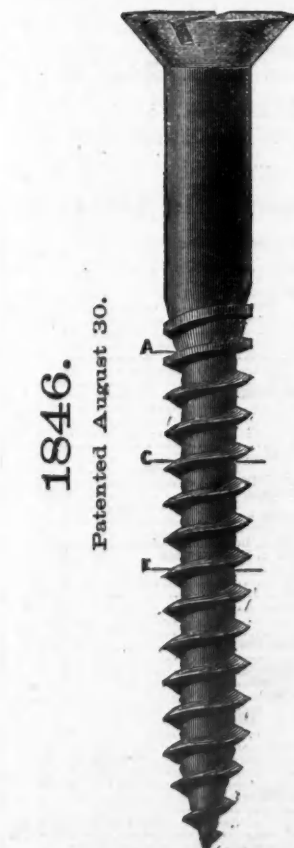
To distinguish this screw we have adopted a trade-mark, which is also secured to us.

The accompanying engravings show the progress of making screw from the old blunt point to style now adopted.

Experience has shown that the wear point of screws, as formerly made, is at the heel of the thread, where all



1776.



1846.  
Patented August 30.

Section at Line A B  
Section at Line C D  
Section at Line E F



1876.  
Patented May 30.  
COVERED BY TRADE MARK.

Section at Line A B  
Section at Line C D  
Section at Line E F

Estimated to be FIFTY PER CENT. stronger than a Screw as Common

the strains of forcing the screw into the wood naturally concentrate.

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated. See sections at lines.

### CLAIM.

"A Pointed Wood Screw having the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths between the threads, substantially as described."



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FIRE BRICK**AND  
**CLAY RETORT WORKS.**

Established 1845.

Office, foot of Houston Street, East River,  
NEW YORK.The largest stock of Fire Brick of all shapes and  
sizes on hand and made to order at short notice.  
Cupola Brick, for McKenna Patent,  
and others. Fire Mortar, Ground Brick, Clay and  
Sand. Superior Kaolin for Rolling Mills and found-  
ries. Stone Ware and other Fire Clay and Sand,  
from my own mines at New Jersey and Staten  
Island, by the cargo or otherwise.**NEWTON & CO.,**

Successor to

**PALMER, NEWTON & CO.,**

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**FIRE BRICK**Stove Linings,  
Range and Heater Linings

Cylinder Brick, &amp;c., &amp;c.

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AND

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House and other Tile, Cupola Brick, &c. Dealers in  
and Miners of Fire Clay and Fire Sand. Clay bank at  
Burt's Creek, New Jersey. Manufacture: Van Dyke,  
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ESTABLISHED 1856.

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Gas Works, Lime Kilns, Tanneries, Boiler  
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Proprietor of the

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Manufacturer of FIRE BRICK, HOLLOW  
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Office & Depot: 418 to 422 East 23d St., N. Y.**TROY FIRE BRICK WORKS**

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WORKS: Mt. Savage Junction, Md., and Lockport, Pa.**BORGNER & O'BRIEN,**

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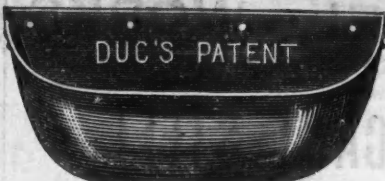
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Tiles, Blocks, &amp;c., &amp;c.

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PHILADELPHIA.

Eighteen years' practical experience.

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No Corners to Catch.

Light Running and Very Durable.

The only Scientifically Constructed Elevator Bucket  
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MILL BUCKET.  
In 3 1/2 in. to 10 in.  
Sizes.THE STORE-HOUSE BUCKET.  
(Partial straight front.)  
In 12 in., 14 in., 16 in., and 18 in. Sizes.**T. F. ROWLAND,**

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Send for Circular.**NICHOLSON FILE CO.,**  
Manufacturers of  
**FILES AND RASPS.**

ALSO

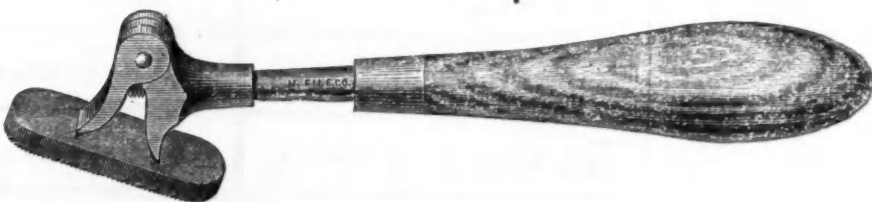
**Filers' Tools & Specialties.**

Manufactory and Offices at Providence, R. I.

The following space will be used in illustrating our specialties, the matter being changed weekly.

**STUB FILES AND HOLDER.**

FILES DETACHABLE. Patented May, 1878.



PILLAR.

REAPER.

PITSAW. THREE-SQUARE. CABINET.

The above engraving represents a useful and economical device  
for holding prepared stubs or short files, for shaping and finishing in  
and around depressions, where the ordinary file could not be used, and  
is shown in the illustration at two-thirds its full size.The shapes of these stubs may be of almost any of the varieties  
found in files; and their cut of any character or degree of coarseness  
required, either as rasp or file.The character of cut may be varied to adapt them to the work,  
and in ordering, the nature of the work upon which the files are to be  
used, should be stated.This kit will be found to be of especial service in working either  
upon wood or iron (as upon stove plate and soft metal patterns), stone  
and zinc monumental work, also in sculptural work in marble, and  
other work of a similar nature.The Holder is attached to the files by simply turning the handle,  
and thus, by means of a screw, forcing the jaws open, and into the re-  
cesses prepared for them in the file-stubs. The files are released by  
turning the handle in the opposite direction.The kit is prepared for the market in boxes, containing the Holder  
and six stub files, 2 inches in length. Their sizes and varied shapes  
will be seen by reference to the above illustrations.**G. W. Bradley's Edge Tools.**Butchers' Cleavers,  
Butchers' Choppers,  
Axes and Hatchets,  
Grub Hoes and Mattocks,  
Mill Picks,  
Box Chisels and Scrapers,Ring Bush Hooks,  
Ax Eye Bush Hooks,  
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Representing in the Dominion of Canada several

American Manufacturers, is ready to accept

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**IMPROVED MILD CENTERED CAST STEEL.**  
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Polished, Compressed Drill Rods and Wire,  
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## WIRE OF ALL KINDS,

Steel Horse Shoes, Tire, Axles and other Forgings,  
Boiler Plate, Galvanized and Black Sheet Iron, Corrugated Roofing and  
Siding of Siemens-Martin, Bessemer Steel and Iron.

All made from our own Lake Superior Ores.

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400 RINGER

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Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.

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For Railroad Switches, Freight Cars, and the Hard-

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Patent Horizontal Rim Cylinder Night Latch.

Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back Knob

RIGHT OR LEFT HAND.

**PASSENGER CAR LOCKS,** Bronzed, Nickel-Plated and Japanned

Catalogues and Samples sent upon application.

**BROWN'S**  
**HOG AND PIG**  
**RINGER AND RINGS**

Only single Ring in

the market that closes

on the outside of the

nose. No sharp points

in the nose to keep it

so.

Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.

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Turns out at least double work by increased speed  
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Increases their Durability at least five fold.

Secures absolute safety from cracking.

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Rifle, Sporting and Blasting Powder

The most popular Powder in use.

Dupont's Gunpowder Mills, established  
in 1801, have maintained their great reputation  
for 78 years. Manufacture the following cele-  
brated brands of Powder:

**DUPONT'S DIAMOND GRAIN.**  
Nos. 1 (coarse) to 4 (fine), unequalled in strength, quick-  
ness and cleanliness; adapted for Glass Ball and  
Pigeon Shooting.

**DUPONT'S EAGLE DUCKING.**  
Nos. 1 (coarse) to 3 (fine), burning slowly, strong and  
clean; great penetration; adapted for Glass Ball,  
Pigeon, Duck and other shooting.

**DUPONT'S EAGLE RIFLE.**  
A quick, strong, clean Powder of very fine grain for  
Pistol shooting.

**DUPONT'S RIFLE, Fg. "Sea Shooting."**  
FFg and FFFg.—The Fg for long range rifle shoot-  
ing, the FFg and FFFg for general use, burning  
strong and moist.

Also all kinds of Sporting, Mining, Shipping and  
Blasting Powders of all sizes and descriptions. Special  
grades for experts. Also, Musket, Cannon, Mortar  
and Mammoth Powder, U. S. Government standard.  
Powder manufactured to order of any required grain  
or proof. Agencies in all cities and principal towns  
throughout the U. S. Represented by

**F. L. KNEELAND,** 70 Wall St., N. Y.

N. B.—Use none but Dupont's Fg or FFg Powder  
for long-range Rifle shooting.

## GUN POWDER.

**Laflin & Rand Powder Co.**

No. 26 Murray Street, New York,

Manufacture and sell the following celebrated brands  
of Sporting Powder known everywhere as

**ORANGE LIGHTNING,**

**ORANGE DUCKING,**

**ORANGE RIFLE**

more popular than any Powder now in use.

**Blasting Powder and Electrical Blasting**

**Apparatus.**

**Military Powder** on hand and made to order.

**SAFETY FUSE, FRICTIONAL & PLATINUM**

**FUSES.**

Pamphlets showing sizes of grain sent free.

**Emery, Grindstones, &c.**

**Walter R. Wood,**

**GRINDSTONES.**

Berea, O., Nova Scotia, & other brands

283 and 285 Front Street, New York.

**WORTHINGTON & SONS.**

North Amherst, Ohio.

Manufacturers of

**Lake Huron Amherst**

**and Berea**

**GRINDSTONES.**

**BOYD & CHASE,**

The largest manufacturers in the world of

**OIL**

**STONE**

Of all description.

107th Street and Harlem River,

Send for Illustrated Price List. **NEW YORK**

**H. S. WOOD & CO.,**

Manufacturers of

**Importers of**

**Berea, O.,**

**Deep River, Conn.,**

**Newcastle, Eng.,**

**Wickersley, Eng.,**

**Lake Huron, Mich.,**

**Nova Scotia,**

**GRINDSTONES,**

33 West and 58 Washington Sts., N. Y.

**S. H. JENNINGS,** Deep River, Conn.,

Importers of and Sole

Agent in the United States for the HIGHEST

GRADE of LONDON GRIND EMERY. Prices

low. Do not hesitate to write for information.

**NATIONAL STEAM PUMP.**

Adapted to every possible Duty.

Send for Illustrated Catalogue.

**WM. E. KELLY,**

New Brunswick, N. J.

New York Salesroom, 25 Murray St.



Steel.

# THE EDGAR THOMSON STEEL CO., LIMITED.

MANUFACTURERS OF

STEEL RAILS, BLOOMS &amp; INGOTS

General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.

New York Office, 57 Broadway.

The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.

The Company warrants its rails equal in quality to any manufactured in the United States. Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

Branch Office and P. O. Address, No. 48 Fifth Ave., Pittsburgh, Pa.  
D. McCANDLESS, Chairman. WM. F. SHINN, General Manager.

## JOHN WILSON'S CELEBRATED

BUTCHERS' KNIVES,  
BUTCHERS' STEELS,  
AND  
SHOE KNIVES.

THE TRADE MARK, IN ADDITION  
TO THE NAME,  
IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY  
**JOHN WILSON.**



GRANTED A.D. 1766, BY THE  
CORPORATION OF CUTLERS OF SHEFFIELD,  
AND PROTECTED BY ACT OF PARLIAMENT.

BUYERS ARE SPECIALLY CAUTIONED AGAINST  
IMITATIONS OF THE MARK, AND THE  
SUBSTITUTION OF COUNTERFEITS  
BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750

## North Chicago Rolling Mill Co.

ESTABLISHED 1857.

CAPITAL, \$3,000,000.

INCORPORATED 1866.

Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF

MERCHANT BAR, FISH PLATES, PIG METAL,  
IRON RAILS & BESSEMER STEEL RAILS.

CAPACITY OF WORKS.		
Fish Plates.....	20,000	tons
Merchant Bar.....	10,000	"
Pig Metal.....	10,000	"
Iron Rails.....	10,000	"
Steel Rails.....	10,000	"
Total Capacity per year.....	250,000	"

OFFICES:

17 Metropolitan Block, Chicago, Ill.  
37 Mitchell Block, Milwaukee, Wis.

O. W. POTTER, President, CHICAGO.  
S. F. BURT, Vice-President, NEW BEDFORD.  
S. CLEMENT, Treasurer, MILWAUKEE.  
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## HERMANN BOKER & CO.,

101 and 103 Duane Street, New York.

PROPRIETORS OF



VISE &amp; TOOL WORKS.

PICKS, MATTOCKS, CRUB HOES, HAMMERS.



WROUGHT IRON STEEL FACE  
(P. W. PATTERN.)

"FULLY WARRANTED."



Sole Agents for  
H. Boker & Co.'s Celebrated "Tree" Brand Cutlery.  
H. Heinisch's Sons Unrivaled Shears, Trimmers, Scissors, Japanned and Nickled.  
Ward & Payne's Sheep Shears. Peugeot Brothers' Horse Clippers.

J. W. GARDNER'S

Unequaled and "Warranted Superior to All"

Pocket Knives and Barlows.

Also a full stock of

Geo. Wostenholm & Sons', W. & S. Butcher's,  
Manhattan and O. K.

POCKET CUTLERY &amp; RAZORS.

LAMSON &amp; GOODNOW MFG. CO.

TABLE CUTLERY,

Guns and Pistols

FISHING TACKLE,

Arms and Ammunition.

## Philadelphia Smelting Co.,

S. E. Cor. Twelfth and Noble Sts., PHILADELPHIA.

GENUINE BABBITT,

Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.

ALL GRADES OF ANTI-FRICTION METALS.  
DEOXIDIZED BRONZE.

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals.  
Soldiers, Stereotype Metal, Gas and Steam Fittings and Fixtures, Brass and Composition Castings.

Send for circulars.

# WIRE NAILS

French Points,

Window Shade Nails,

Upholstering, **WAGON NAILS**, Molding Nails,

(Sample Cards sent on application.)

Electrotype,

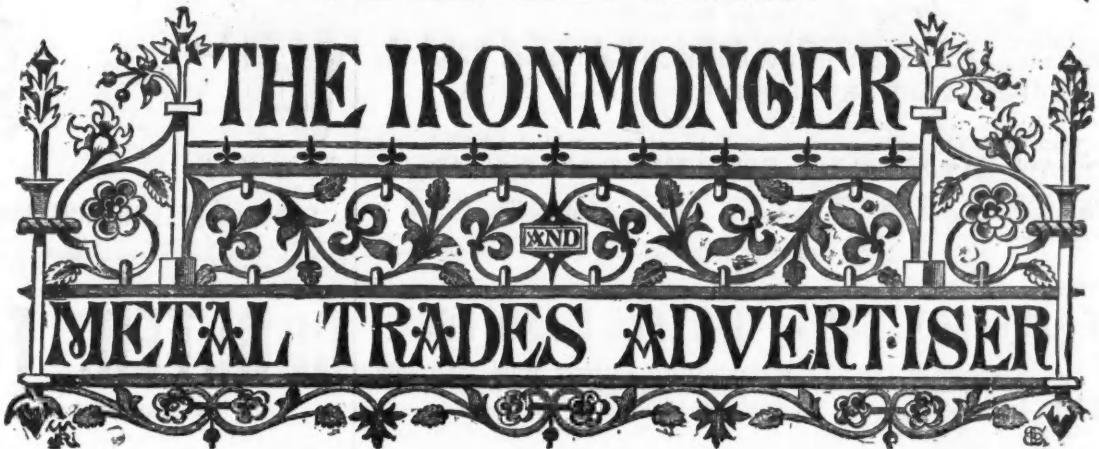
Roofing Nails,

Barbed Caster Nails.

Veneer Nails, Label Tacks and small Nails of all kinds, Cabinet Nails, Barbed Lock Nails, Cigar Box Nails, &c., &c., put up in bulk, 5 lb. packages, 1 lb. papers, or as wanted.

**AMERICAN WIRE NAIL CO.**  
Factory, Fifteenth and Madison Sts. COVINGTON, KY.

ESTABLISHED IN 1859.



PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

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**Notes of Novelties.**—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.

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### SPECIAL ISSUES.

In April and October of each year there is published a Special Issue, the circulation of which is not less than Twelve Thousand (12,000) copies.

### THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, presented free to every Subscriber to the *IRONMONGER AND METAL TRADES' ADVERTISER*. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

## THE FOREIGN SUPPLEMENT

Is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication in 1879 will be as follows: JANUARY 11, FEBRUARY 8, MARCH 8, APRIL 5, MAY 3 and 31, JUNE 28, JULY 26, AUGUST 23, SEPTEMBER 20, OCTOBER 18, NOVEMBER 15, DECEMBER 13.

This Supplement is published in

### FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach out in the native language of eighty millions of German, forty-two millions of French, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in any language at the following

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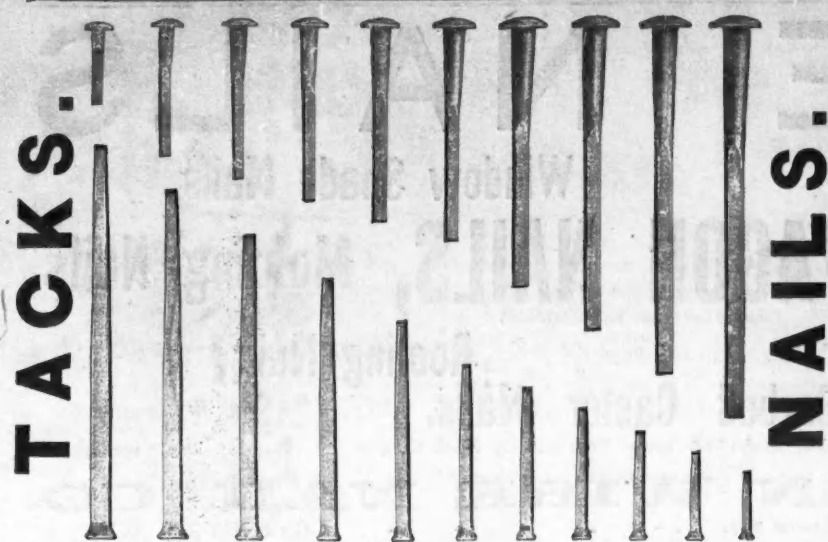
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### THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.





## TACKS and SMALL NAILS Of Every Kind.

COPPER, ZINC, STEEL & SWEDES & COMMON IRON SHOE NAILS, &c.  
Copper, Iron and Galvanized Boat Nails,

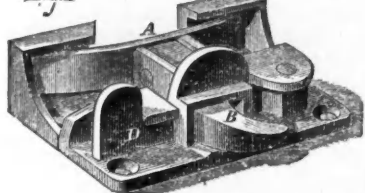
Regular or Chisel Pointed.  
Brass & Iron Wire Nails, Moulding Nails and Escutcheon Pins, Chair & Cigar Box Nails, 2d & 3d Fine Nails, Roofing Tacks and Nails, &c., &c.  
MADE BY THE

**AMERICAN TACK CO.,** Fairhaven, Mass.

A full line of goods may be found at our  
NEW YORK SALESROOM, No. 117 Chambers Street.

## THE PERFECT SASH TIGHTENER AND LOCK.

Fig. 1



Manufactured entirely from Malleable Iron, Burglar Proof, Anti-Rattling, Draws Sash to Exact Center. No Springs to Get out of Order.

The Best in the Market.

## METALLIC CLOTHES PIN.

For either Wire or Rope Line,  
Will securely hold any article, from a silk handkerchief to a carpet. No article can be blown away. Does not soil the clothing. Manufactured by

**CLARK & SMITH,** Patentes, Chester, Orange Co., N. Y.  
SOLE AGENTS,  
**J. I. BROWER & SON,**  
286 Greenwich St., New York,

Who keep a general assortment on hand for the country trade. Jowett's Horse Ramps, 14, 15 and 16 inch, Maharay's \$10 Tire Shrinker, Heller's Ramps. Send for Circular.  
SPECIAL DISCOUNTS TO JOBBERS.

**HAMMER & CO.,**  
Branford, Conn.,  
Manufacturers of the following Patented Articles of  
**MALLEABLE IRON:**  
Hammer's Adjustable Clamps.  
Hammer's Malleable Iron Oilers.  
Hammer's Mail Iron Hand Lamps.  
Hammer's M. I. Hanging Lamps.  
For Sale by all the principal Hardware Dealers.  
**Malleable Iron Castings**  
Of superior Quality and Hardware Specialties in Malleable Iron made to order.

## STANDARD NUT CO.,

Pittsburgh, Pa.,

MANUFACTURERS OF

**HOT PRESSED**  
Square & Hexagon Nuts,  
**R. R. FISH BARS,**  
**BOLTS,**  
**SPIKES,**  
**RIVETS, &c.**

**C. T. DRAPER & CO.,**  
Sing Sing, N. Y.  
Manufacturers of "SUPERIOR"  
**HAND CUT**

**ESTABLISHED 1848.**

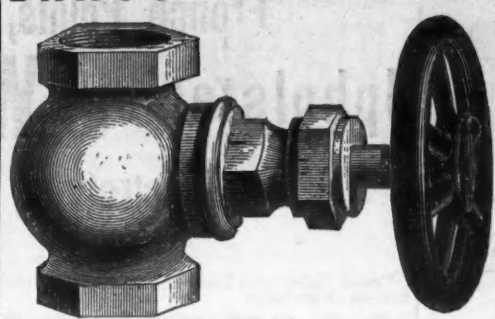
**FILES and RASPS**  
Made from Best  
ENGLISH CAST STEEL.  
Quality guaranteed by written warranty when required.

## THORNE, DeHAVEN & CO., Drilling Machines,

21st Street, above Market, Philadelphia.

PORTABLE DRILLS. Driven by power in any direction.  
RADIAL DRILLS. Self-feed—Large Adjustable Box Table.  
VERTICAL DRILLS. Self-feeding.  
MULTIPLE DRILLS. 2 to 20 Spindles.  
HORIZONTAL BORING AND DRILLING MACHINES.  
HAND DRILLS. CAR BOX DRILLS.  
SPECIAL DRILLS. For Special work.

## McNab & Harlin Mfg. Co., MANUFACTURERS OF BRASS COCKS AND VALVES,



For STEAM,  
WATER  
and GAS.

Iron Pipe and Fittings.  
PLUMBERS' MATERIALS

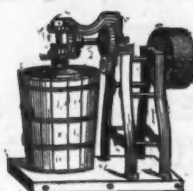
New Illustrated Catalogue and Price List sent by express to the Trade on application.

Factory, Paterson, N. J.

56 John Street, N. Y.



HAND FREEZER.  
2 to 25 qts.  
\$3.50 to \$25.00



HAND OR POWER.  
25 and 50 qts.  
\$75.00 and \$175.00



HAND OR POWER.  
100 CRUSHER.  
\$75.00

SANDS' TRIPLE MOTION WHITE MOUNTAIN ICE CREAM FREEZERS.  
Galvanized iron outside, tin inside. No secretions of oxide of zinc need be feared in the use of this freezer. Simple in construction, perfect in results. Send for descriptive circular and discounts of this celebrated freezer. Address  
**WHITE MOUNTAIN FREEZER CO.,** Laconia, N. H.

## COULTER, FLAGLER & CO.,

87 Chambers and 69 Reade Sts., New York,

**Hardware Manufacturers' Warehouse.**



Office and Warehouse of Union Hardware Co.; Rugg Mfg. Co.; Draw Knives, Chisels, &c.; Deuse Bros. Bits, Corkscrews, &c.; Richardson Bros. Saws of all kinds; Brooks Edge Tool Co.'s Axes, Hatchets, &c.; M. Price, Hatchets, &c.; J. & W. Rothery, Extra Hand Cut Files; L. D. Frost, Carriage Bolts, Refined and Norway Iron; Cowles Hardware Co., Screwdrivers, Mining Knives, &c.; Rider, Wooster & Co., Anti-Friction Barn Door Hangers, &c.; H. B. Hawley, Shears of all kinds; Walden Knife Co., Pocket Cutlery; American Screws, N. Y. Anti-Friction Metal Co.'s Ball-Bolt Metals; Howard, Razor Strops; C. Forschner, Spring Balances; P. Lowen- traut & Co., Dividers, Calipers, &c.; Shepard Hardware Co., Putters, Blind Hinges, &c.; Saxton & Amedon, Braces, all kinds; Bevia Bros. Mfg. Co., Bells, all kinds; B. H. Parsons & Bro., Flyers, Nippers, &c.; C. L. Griswold, Cast Steel Bits; Lancaster Lock Works, Jail Locks.

## BUERK'S Watchman's Time DETECTOR.

IMPORTANT FOR ALL LARGE CORPORATIONS  
AND MANUFACTURING CONCERNS.

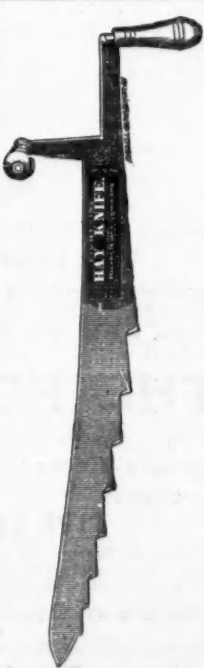
Capable of controlling with the utmost accuracy the motion of a watchman or patrolman as the same reaches different stations of his beat. The instrument is complete in itself, portable and as reliable as the best lever watch. It requires no fixture or wires communicating from room to room, as is the case with the ordinary watch clocks. A small, inexpensive stationary key is alone required at each station. The instrument will, in all cases, be warranted perfect and satisfactory.  
N. B.—The suit against Imhauser & Co., of New York, was decided in my favor, June 10, 1874. Another suit has been decided against them and a fine assessed Nov. 12, 1875, for selling contrary to the order of the Court. Persons using clocks infringing on my Patent will be dealt with according to law.

**J. E. BUERK, Proprietor,**

P. O. Box 979.

No. 230 Washington Street, Boston.

In sending for circular or ordering the above, please mention this paper.



## LIGHTNING HAY KNIVES, WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and it seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suitable for shipping by land or water to any part of the world.

Manufactured only by

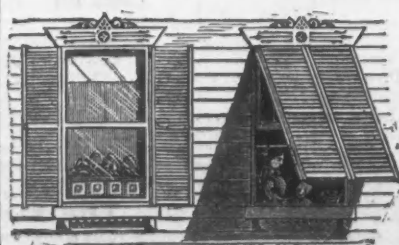
**HIRAM HOLT & CO.,**

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

SEMPLE & BIRGE MFG. CO., Agents at St. Louis.

## Dearborn's Pat. Adjustable Blind Awning Fixtures.



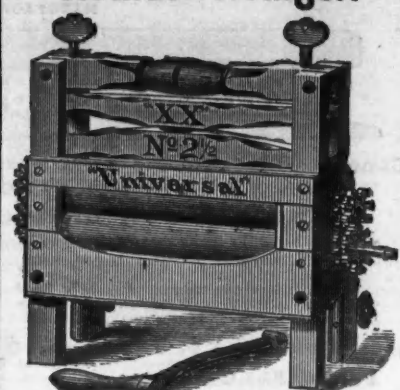
Either old or new Blinds thus fitted can be opened in the usual way or used as an awning at pleasure.

For particulars address the sole manufacturers,

**BOSTON BLOWER CO.,**

Boston, Mass.

## THE "OLD RELIABLE" UNIVERSAL Clothes Wringer.



Improved with Rowell's Double Cog-Wheels on both ends of each roll.

Over 500,000 sold!

And now in use, giving "Universal" satisfaction

EVERY WRINGER WARRANTED.

Be sure and inquire for the "Universal." Sold by the Principal Jobbers in Hardware and House-Furnishing Goods everywhere.

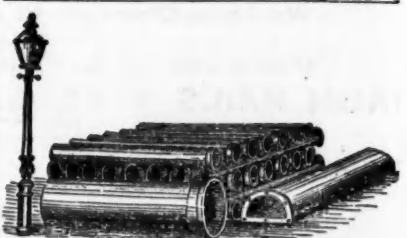
Special rates given for export.

**Metropolitan Washing Machine Co.**

32 Cortlandt St., New York.

## WM. S. CARR & CO.

Sole Manufacturers of  
**CARR'S**  
PATENT  
Water  
Closets,  
PUMPS, CABINET WOOD WORK, &c.  
106, 108 & 110 Centre Street,  
Factory, Mott Haven, NEW YORK.



## R. D. WOOD & CO.

Philadelphia,  
Manufacturers of

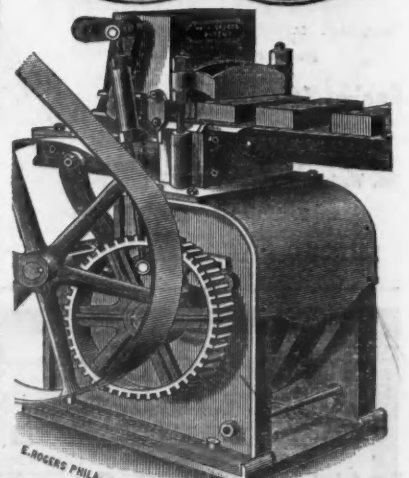
## Cast Iron Pipe FOR WATER AND GAS.

Lamp Posts, Valves, &c.,  
Mathew's Pat. Anti-Freezing Hydrants.  
400 CHESTNUT STREET.

The Patent Combined  
**Dinner-Pail and  
Lantern.**  
The most perfect Dinner Pail in the world. Hot coffee for dinner and a Lantern at night.  
Manufactured by **JOS. HAIGHT,**  
PORT CHESTER, N. Y.  
Sent by express on receipt of \$1.00. Special attention given to export orders. Traveling Agents Wanted.

## GREGG BRICK MACHINES

"Masterpieces Centennial Exposition, 1876."

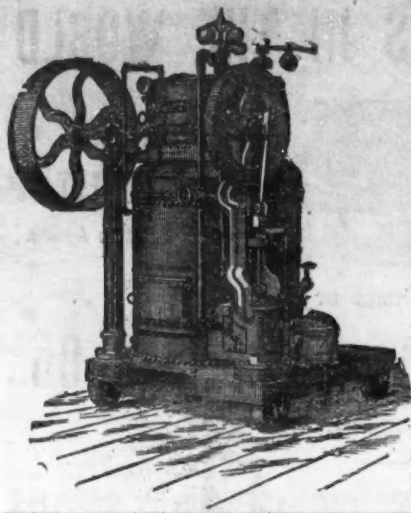


Awarded Highest Prize Paris Exposition, 1872. The above is a cut of Gregg's No. 2 Brick Machine, simple, strong and efficient, for making and re-pressing bricks. Gregg's Triple Pressure Brick Machines. Gregg's Combination Brick Machines. Gregg's Steam Power Re-pressing Machines. Gregg's Hand Power Presses. Agents wanted in every city and town. Send for catalogue.  
**GREGG BRICK CO.,**  
402 Walnut St., Philadelphia, Pa.









## SHAPLEY ENGINE.

Patented Feb. 10, 1874.  
 Released June 22, 1875.  
 Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivalled.

MANUFACTURED BY

**SHAPLEY & WELLS,**

Binghamton Iron Works,  
 Binghamton, N. Y.

MANUFACTURERS OF  
 Stationary Engines and Boilers.

Also Machinery for Mills of all kinds and Tanneries. Also their celebrated Bark Mills, acknowledged to be the best. Send for reduced price list circular.



**BUCK BROTHERS, Millbury, Mass.**

The most complete assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels,

**PLANE IRONS.**

Gauges of all lengths and circles beveled inside or outside. Nail Sets, Scratch and Belt Awns. Chisel Handles of all kinds. Carving Tools. Also small Boxes of tools of best quality.

THE PROVIDENCE TOOL COMPANY'S

## Patent Anti-Friction Hoisting Block.

For hoisting Coal, Ore, Ice, or other heavy work, where Steam or Horse power is used. Made of Galvanized Iron and Steel, and not affected by exposure to weather.

Twenty-four feet hoist turns the friction wheels on the side around once.

The Block uses 3 inch to 4 inch rope, and will sustain with safety a load of 4 tons.

Will run either end up, or on its side. The lightest running and most durable Block yet produced.

Satisfaction guaranteed. Try one.

Send for Price List of Blocks.



**Providence Tool Co.,**

PROVIDENCE, R. I.,

**Wheeler, Madden & Clemson**

**MFG. CO.,**

MIDDLETOWN, . . . NEW YORK.

Manufacturers of

WARRANTED CAST STEEL

## SAWS

Of every description, including  
 Circular, Shingle, Cross-Cut, Mill, Hand,  
**WOOD SAWS, Etc., Etc.**

**AMERICAN SAW CO.,**

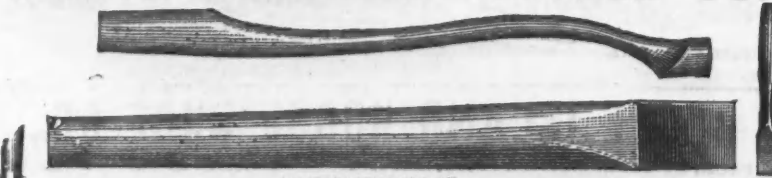
Manufacturers of

Movable Toothed Circular Saws,  
**PERFORATED CROSS-CUT SAWS**  
 And **SOLID SAWS** of all kinds. Trenton, N. J.

**HUNDLEY & HANKS,**

PROPRIETORS OF

**NORTH CAROLINA HANDLE CO.**



MANUFACTURERS OF

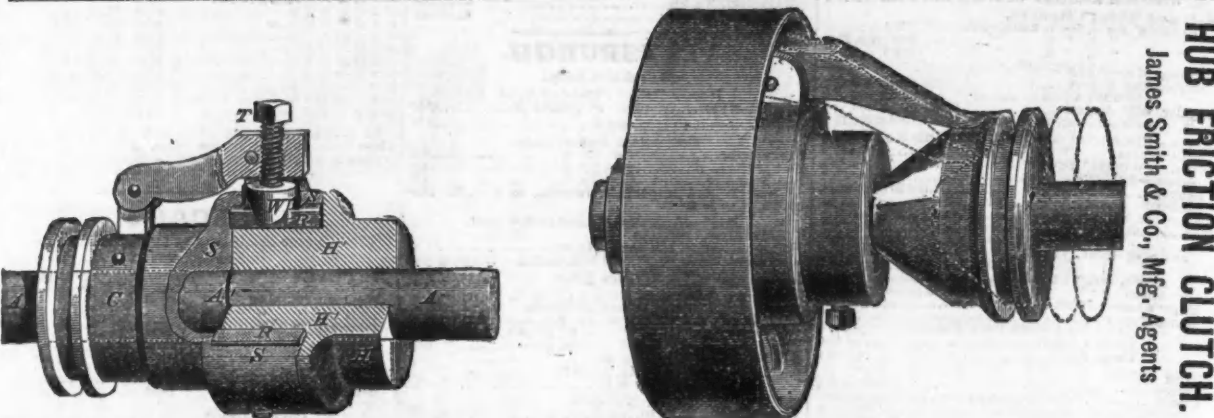
**Handles and Spokes,**

79 Reade Street and 97 Chambers Street, NEW YORK.  
 HARDWARE COMMISSION MERCHANTS.



**PATENT**  
 Expanding, Self-Draining  
**RUBBER BUCKET.**

Manufactured only by  
**L. M. RUMSEY & CO.**



**HUB FRICTION CLUTCH.**  
 James Smith & Co., Mfg. Agents

## PATENT HUB FRICTION CLUTCH.

Manufactured by the **HUB FRICTION CLUTCH CO., Limited, Philadelphia.**

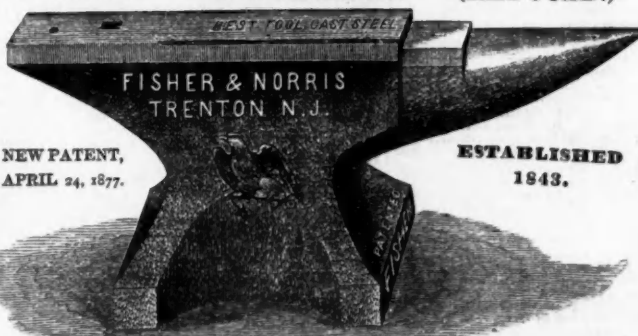
We claim for this device the following advantages for a perfect clutch, it having been adopted by several of the leading manufacturers of machinery and machinists' tools: It works easily but effectively. It works instantly and without noise. It is very durable, and is extremely simple and cheap, and has proven itself to be the best clutch in the market. Special arrangements can be made with leading manufacturers for the adoption of this clutch for their own tools. This clutch can and will be sold for less money than any other clutch in the market.

For sale by Geo. V. Casson, Philadelphia; Morton, Reed & Co., Baltimore.

H. S. MANNING & CO., NEW YORK AGENTS, 111 Liberty Street

JAMES SMITH & CO., Mfg. Agents, 137 Market Street, Philadelphia.

## THE "EAGLE." (PRICES REDUCED.)



NEW PATENT,  
 APRIL 24, 1877.

ESTABLISHED  
 1843.

## WARRANTED!!

Better than the best English Anvil.

Face in one piece, of BEST TOOL CAST STEEL. PERFECTLY WELDED, perfectly true; of hardest temper and never to come off or "settle." Horn of tough untempered steel, never to break or bend. It does not bounce the hammer back, and therefore can do more work with lighter hammer. Only Anvil made in United States fully warranted as above. None genuine without our trade mark.

New Price List, April 1, 1879.

ANVILS weighing 100 lbs. to 800 lbs., 9 cents per lb., with special discounts to the trade.

SMALLER ANVILS ("MINIMS").

No. 00 0 1 2 3 4 5 6 7 8 9 lbs.

Weighing about \$ 10 15 20 30 40 50 60 70 80 90 lbs.

\$2.25 2.75 3.25 4.00 4.50 5.25 6.00 6.50 7.25 8.00

N. B.—These are the RETAIL PRICES. The only additional cost will be the freight to the purchaser's place of residence.

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OF INTEREST TO ALL WHO USE STEAM FOR POWER, HEATING OR DRYING, &c.



Has no floats or concealed parts. Once adjusted, never needs the slightest attention. Can be set to discharge water at any desired temperature. Occupies less space, and being so light, can be used in situations where no others can.

Never FREEZES in exposed situations. Simplest in construction of any Trap made. Has no reservoir, but discharges incessantly. Can be set in any position, without altering its working.

SEND FOR CIRCULAR TO MANUFACTURERS, **PANCOAST & MAULE, Philad'a.**

## HOLROYD & CO.,

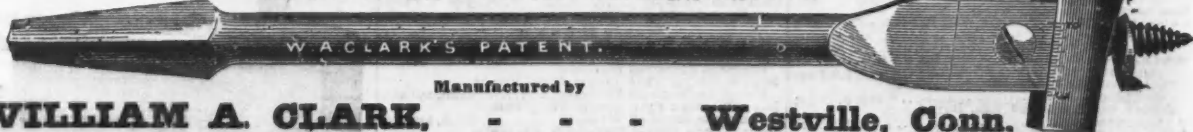
Waterford, N. Y.



## CLARK'S PATENT EXPANSIVE BITS

Made of JESSOP'S BEST CAST STEEL, and warranted superior to any other

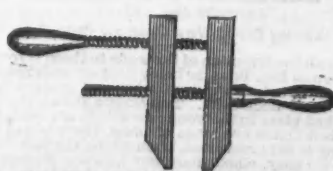
Two sizes: Large Size Boring, 1/4 to 3 inches; Small Size Boring, 1/4 to 1 1/4 inches.



**WILLIAM A. CLARK,**

Manufactured by

Westville, Conn.



**R. BLISS MFG. CO.,**

Manufacturers of Hand and Bench Screws, Cabinet and Piano-Forte Makers' Clamps, Chisel Handles, Carpenters' Mallets, Croquet Games, Tourne-Boys' Tool Chests, Architectural Building Blocks, Toys, &c.



## Ludlow Valve Mfg. Co.,

OFFICE AND WORKS:

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.

**VALVES.**

Double and Single Gate, 1/2 in. to 48 in.—outside and inside Screws, Indicator, &c., for Gas, Water and Steam. Send for Circular.

**Also FIRE HYDRANTS.**







**CHAS. W. ERVIEN & CO.,**  
IRELAND ST.  
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BUILDERS OF  
STATIONARY & MARINE  
**ENGINES, BOILERS**  
SHAFTING, GEARING,  
AND  
**MILL WORK**  
GENERALLY.  
Special Machinery  
BUILT TO ORDER.



Vertical  
AND  
Horizontal  
**Engines,**  
Of New and Heavy De-  
signs, from 2 to  
100 H. P.,  
on hand or in process of  
erection.

**JOHN ADT,**

20, 22, 24 and 26 Artisan Street, New Haven, Conn., U. S. A.

Automatic machines to straighten and cut wire of all sizes to any length; to cut and mill wire for butt pins, bolt shanks and similar articles; to make all kinds of staples, with either square, fleam, chisel or shear points; to roll points on picture nails and similar articles without heat; to cut and form wire into various shapes and sizes, such as rings, buckles, fence bars and similar articles; to make spiral springs; and for other special purposes to order.

Machines to straighten and cut wire by hand; to rivet together articles of hardware; to drill butts and other hardware; to mill butts; to drill or countersink several holes at once, close together or far apart, on a regular or irregular line; to drill, tap, mill and thread small articles of hardware, such as thumb screws, thumb nuts, &c.; to spin plain or ornamental caps on picture nails, tassel hooks, &c.; for grinding, buffing and polishing; to drive screws into locks, knobs, &c.; foot and hand presses and special power presses to order.

**L. S. GRAVES & SON,**

Manufacturers of

SCREW, GEARED, HYDRAULIC and HAND

**ELEVATORS**FOR  
Hotels, Office and Mercantile Buildings, Warehouses, or Manufacturers' Use,COMBINING  
The most approved Mechanical Principles and Devices, for Safety, Durability, Noiseless  
Running and Economy of Power.Also Manufacturers of  
**BOOT & SHOE MACHINERY.** Shafting, Pulleys, Hangers and Couplings.  
Cor. Mill and Factory Streets, ROCHESTER, N. Y. Send for Catalogue.

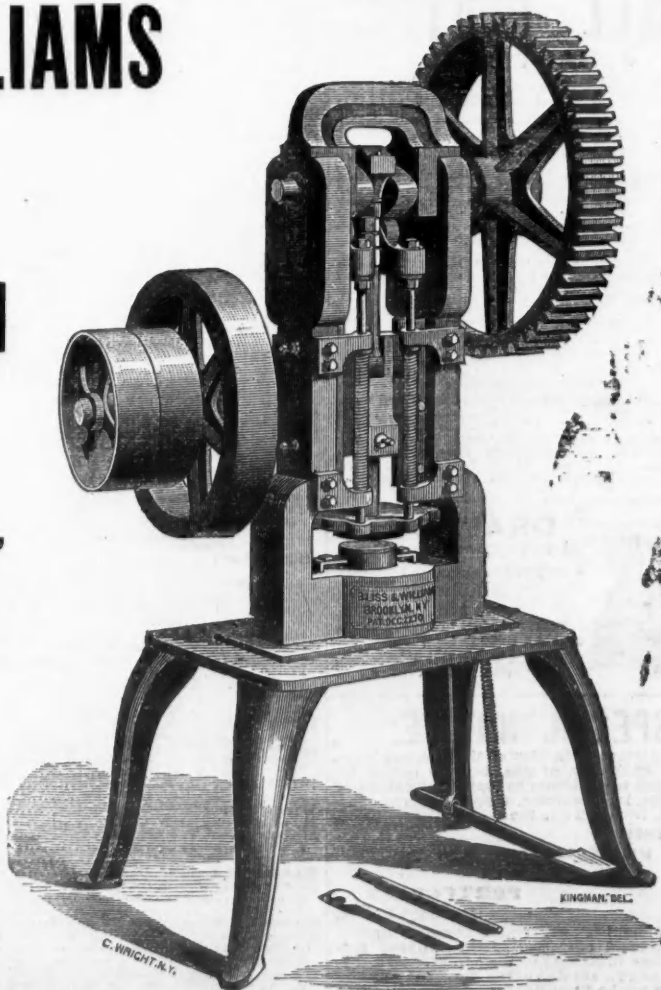

**TURNED MACHINE SCREWS,**  
One-sixteenth to five-eighths diameter.  
Heads and points to sample.  
**IRON, STEEL and BRASS.**  
Lyon & Fellows Mfg. CO.,  
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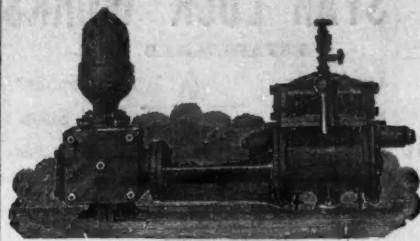
MANUFACTURERS OF ALL KINDS OF

**PRESSES,  
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Machinery**For Working Sheet Metals,  
&c.

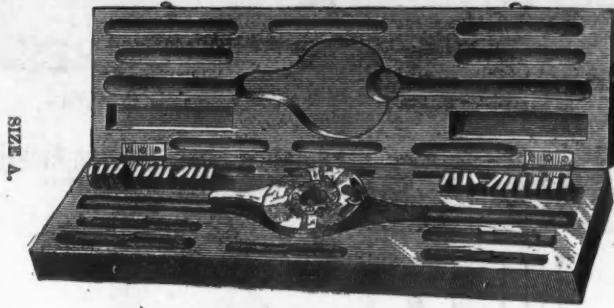
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The No. 1 Power Drawing Press, geared, with Blank Holder, as represented above, is designed for drawing Lantern Bottoms, Rim Covers, Patty Pans, Tea Pot Breasts, small Pie Plates, Pail Covers, Butter Dishes, etc.

**A. S. CAMERON'S  
PATENT****"SPECIAL" STEAM PUMP**

Is the Standard of Excellence at Home and Abroad.

For reduced price lists address **A. S. CAMERON, East 23d Street, New York.****MAGIC SCREW PLATE.**

MANUFACTURED BY THE

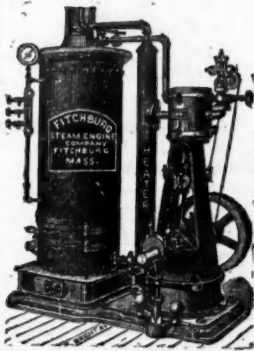
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MANUFACTURERS OF

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**STEAM ENGINES,  
Vertical or Horizontal.**

Combined, as in cut, 2 to 12 H. P. or on independent beds, 2 H. P. upwards to 200 H. P. Plain or with Automatic Variable Cut-off. We can refer to hundreds in use, of all sizes, giving perfect satisfaction.

Yacht Engines and Steel Boilers, Shafting, Pulleys, Hangers, &amp;c.

Send for pamphlet, stating where you saw this, to

**Fitchburg Steam Engine Co.,**

Fitchburg, Mass., U. S. A.

**RICHARD DUDGEON,**

No. 24 Columbia Street, New York,

Maker and Patentee of the Improved  
**Hydraulic Jacks**AND  
**Punches.**

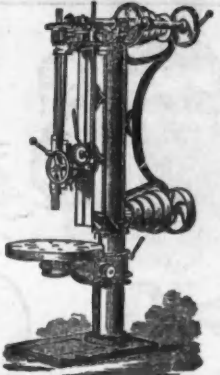
Roller Tube Expanders and Direct Acting Steam Hammers.

Communications by letter will receive prompt attention.

Jacks for pressing on Car Wheels or Crank Pins made to order.

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WORCESTER, MASS.,**

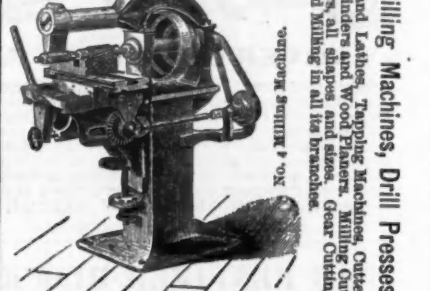
Manufacturers of the

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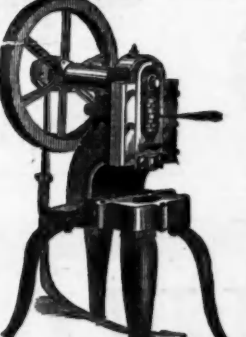
And other First-Class Machinists' Tools.

**E. E. CARVIN & CO.**

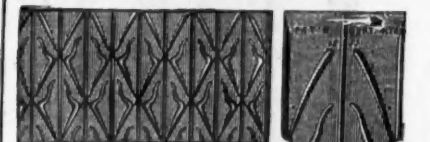
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CORNELL'S BUILDING, NEW YORK.**

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WEST READING PIPE AND  
MACHINE WORKS,  
Manufacturers of  
Cast-Iron Water and Gas Pipe  
of all sizes.Valves and Hydrants, Flange Pipe  
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Grist, Saw and Rolling Mills. Also  
the celebrated CANADA WATER  
WHEEL, the cheapest and best in  
the world. Send for pamphlet.  
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**PUNCHING PRESSES.**  
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**METALLIC  
SHINGLES.**

We call the attention of all parties interested in Roofing, and the owners of large buildings, to the above article. It is superior to slate, cheaper, fire proof, about one-fourth the weight, lays much closer, therefore is storm proof, cannot crack, &c. Any carpenter can put them on. Send for description and Price List to Iron Clad Manufacturing Co., 50 Greenpoint Av., Brooklyn, N. Y. P. O. Box, 258, N. Y. City.

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For lifting carriages, wagons, heavy loaded teams, fire engines, railway cars, &c. Four sizes, with patent rubber cushions; will not mar the finest painted carriage.

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235 Washington St.,  
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Teeth of Gear Wheels, Screw Plates, Hand Ma-  
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Manufactured by

**STEAM  
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Mfg. Co.,

CHICAGO.

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**FRUIT and other  
CAN TOOLS.**167 to 173 Plymouth St., Cor. of Jay,  
**BROOKLYN, N. Y.**Catalogues in English, French or German sent  
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lars, pounds, francs and reichsmarks.



Machinery, &c.

THE JUDSON GOVERNOR.

It is a common method to advertise Governors without cost, unless satisfactory to the customer, and then charge High Prices for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List, OCTOBER 15, 1878.

For dimensions of Governor, see Illustrated Price List.



THE JUDSON PATENT

Improved Steam Governor.

No Charge for Boxing or Cartage. JUNIUS JUDSON & SON, Rochester, N. Y.

Size, Inch.	Plain.	Bright Fin- ished	Extra for Stop Valve
1/2	\$15.00	\$17.00	\$1.90
3/4	18.00	20.00	1.90
1	20.00	23.00	2.95
1 1/4	27.00	31.00	2.75
1 1/2	30.00	34.00	3.95
2	36.00	41.00	3.90
2 1/2	40.00	46.00	3.75
3	43.00	49.00	3.90
3 1/2	46.00	52.00	3.70
4	50.00	55.00	5.00
4 1/2	54.00	59.00	5.00
5	58.00	63.00	6.30
5 1/2	62.00	67.00	7.00
6	66.00	71.00	8.00
6 1/2	70.00	75.00	9.00
7	74.00	79.00	10.00
7 1/2	78.00	83.00	11.00
8	82.00	87.00	12.00
8 1/2	86.00	91.00	13.00
9	90.00	95.00	14.00
9 1/2	94.00	99.00	15.00
10	98.00	103.00	16.00
10 1/2	102.00	107.00	17.00
11	106.00	111.00	18.00
11 1/2	110.00	115.00	19.00
12	114.00	119.00	20.00
12 1/2	118.00	123.00	21.00
13	122.00	127.00	22.00
13 1/2	126.00	131.00	23.00
14	130.00	135.00	24.00
14 1/2	134.00	139.00	25.00
15	138.00	143.00	26.00
15 1/2	142.00	147.00	27.00
16	146.00	151.00	28.00
16 1/2	150.00	155.00	29.00
17	154.00	159.00	30.00
17 1/2	158.00	163.00	31.00
18	162.00	167.00	32.00
18 1/2	166.00	171.00	33.00
19	170.00	175.00	34.00
19 1/2	174.00	179.00	35.00
20	178.00	183.00	36.00
20 1/2	182.00	187.00	37.00
21	186.00	191.00	38.00
21 1/2	190.00	195.00	39.00
22	194.00	199.00	40.00
22 1/2	198.00	203.00	41.00
23	202.00	207.00	42.00
23 1/2	206.00	211.00	43.00
24	210.00	215.00	44.00
24 1/2	214.00	219.00	45.00
25	218.00	223.00	46.00
25 1/2	222.00	227.00	47.00
26	226.00	231.00	48.00
26 1/2	230.00	235.00	49.00
27	234.00	239.00	50.00
27 1/2	238.00	243.00	51.00
28	242.00	247.00	52.00
28 1/2	246.00	251.00	53.00
29	250.00	255.00	54.00
29 1/2	254.00	259.00	55.00
30	258.00	263.00	56.00
30 1/2	262.00	267.00	57.00
31	266.00	271.00	58.00
31 1/2	270.00	275.00	59.00
32	274.00	279.00	60.00
32 1/2	278.00	283.00	61.00
33	282.00	287.00	62.00
33 1/2	286.00	291.00	63.00
34	290.00	295.00	64.00
34 1/2	294.00	299.00	65.00
35	298.00	303.00	66.00
35 1/2	302.00	307.00	67.00
36	306.00	311.00	68.00
36 1/2	310.00	315.00	69.00
37	314.00	319.00	70.00
37 1/2	318.00	323.00	71.00
38	322.00	327.00	72.00
38 1/2	326.00	331.00	73.00
39	330.00	335.00	74.00
39 1/2	334.00	339.00	75.00
40	338.00	343.00	76.00
40 1/2	342.00	347.00	77.00
41	346.00	351.00	78.00
41 1/2	350.00	355.00	79.00
42	354.00	359.00	80.00
42 1/2	358.00	363.00	81.00
43	362.00	367.00	82.00
43 1/2	366.00	371.00	83.00
44	370.00	375.00	84.00
44 1/2	374.00	379.00	85.00
45	378.00	383.00	86.00
45 1/2	382.00	387.00	87.00
46	386.00	391.00	88.00
46 1/2	390.00	395.00	89.00
47	394.00	399.00	90.00
47 1/2	398.00	403.00	91.00
48	402.00	407.00	92.00
48 1/2	406.00	411.00	93.00
49	410.00	415.00	94.00
49 1/2	414.00	419.00	95.00
50	418.00	423.00	96.00
50 1/2	422.00	427.00	97.00
51	426.00	431.00	98.00
51 1/2	430.00	435.00	99.00
52	434.00	439.00	100.00
52 1/2	438.00	443.00	101.00
53	442.00	447.00	102.00
53 1/2	446.00	451.00	103.00
54	450.00	455.00	104.00
54 1/2	454.00	459.00	105.00
55	458.00	463.00	106.00
55 1/2	462.00	467.00	107.00
56	466.00	471.00	108.00
56 1/2	470.00	475.00	109.00
57	474.00	479.00	110.00
57 1/2	478.00	483.00	111.00
58	482.00	487.00	112.00
58 1/2	486.00	491.00	113.00
59	490.00	495.00	114.00
59 1/2	494.00	499.00	115.00
60	498.00	503.00	116.00
60 1/2	502.00	507.00	117.00
61	506.00	511.00	118.00
61 1/2	510.00	515.00	119.00
62	514.00	519.00	120.00
62 1/2	518.00	523.00	121.00
63	522.00	527.00	122.00
63 1/2	526.00	531.00	123.00
64	530.00	535.00	124.00
64 1/2	534.00	539.00	125.00
65	538.00	543.00	126.00
65 1/2	542.00	547.00	127.00
66	546.00	551.00	128.00
66 1/2	550.00	555.00	129.00
67	554.00	559.00	130.00
67 1/2	558.00	563.00	131.00
68	562.00	567.00	132.00
68 1/2	566.00	571.00	133.00
69	570.00	575.00	134.00
69 1/2	574.00	579.00	135.00
70	578.00	583.00	136.00
70 1/2	582.00	587.00	137.00
71	586.00	591.00	138.00
71 1/2	590.00	595.00	139.00
72	594.00	599.00	140.00
72 1/2	598.00	603.00	141.00
73	602.00	607.00	142.00
73 1/2	606.00	611.00	143.00
74	610.00	615.00	144.00
74 1/2	614.00	619.00	145.00
75	618.00	623.00	146.00
75 1/2	622.00	627.00	147.00
76	626.00	631.00	148.00
76 1/2	630.00	635.00	149.00
77	634.00	639.00	150.00
77 1/2	638.00	643.00	151.00
78	642.00	647.00	152.00
78 1/2	646.00	651.00	153.00
79	650.00	655.00	154.00
79 1/2	654.00	659.00	155.00
80	658.00	663.00	156.00
80 1/2	662.00	667.00	157.00
81	666.00	671.00	158.00
81 1/2	670.00	675.00	159.00
82	674.00	679.00	160.00
82 1/2	678.00	683.00	161.00
83	682.00	687.00	162.00
83 1/2	686.00	691.00	163.00
84	690.00	695.00	164.00
84 1/2	694.00	699.00	165.00
85	698.00	703.00	166.00
85 1/2	702.00	707.00	167.00
86	706.00	711.00	168.00
86 1/2	710.00	715.00	169.00
87	714.00	719.00	170.00
87 1/2	718.00	723.00	171.00
88	722.00	727.00	172.00
88 1/2	726.00	731.00	173.00
89	730.00	735.00	174.00
89 1/2	734.00	739.00	175.00
90	738.00	743.00	176.00
90 1/2	742.00	747.00	177.00
91	746.00	751.00	178.00
91 1/2	750.00	755.00	179.00
92	754.00	759.00	180.00
92 1/2	758.00	763.00	181.00
93	762.00	767.00	182.00
93 1/2	766.00	771.00	183.00
94	770.00	775.00	184.00
94 1/2	774.00	779.00	185.00
95	778.00	783.00	186.00
95 1/2	782.00	787.00	187.00
96	786.00	791.00	188.00
96 1/2	790.00	795.00	189.00
97	794.00	799.00	190.00
97 1/2	798.00	803.00	191.00
98	802.00	807.00	192.00
98 1/2	806.00	811.00	193.00
99	810.00	815.00	194.00
99 1/2	814.00	819.00	195.00
100	818.00	823.00	196.00
100 1/2	822.00	827.00	197.00
101	826.00	831.00	198.00
101 1/2	830.00	835.00	199.00
102	834.00	839.00	200.00
102 1/2	838.00	843.00	201.00
103	842.00	847.00	202.00
103 1/2	846.00	851.00	203.00
104	850.00	855.00	204.00
104 1/2	854.00	859.00	205.00
105	858.00	863.00	206.00
105 1/2	862.00	867.00	207.00
106	866.00	871.00	208.00
106 1/2	870.00	875.00	209.00
107	874.00	879.00	210.00
107 1/2	878.00	883.00	211.00
108	882.00	887.00	212.00
108 1/2	886.00	891.00	213.00
109	890.00	895.00	214.00
109 1/2	894.00	899.00	215.00
110	898.00	903.00	216.00
110 1/2	902.00	907.00	217.00
111	906.00	911.00	218.00
111 1/2	910.00	915.00	219.00
112	914.00	919.00	220.00
112 1/2	918.00	923.00	221.00
113	922.00	927.00	222.00
113 1/2	926.00	931.00	223.00
114	930.00	935.00	224.00
114 1/2	934.00	939.00	225.00
115	938.00	943.00	226.00
115 1/2	942.00	947.00	227.00
116	946.00	951.00	228.00
116 1/2	950.00	955.00	229.00
117	954.00	959.00	230.00
117 1/2	958.00	963.00	231.00
118	962.00	967.00	232.00
118 1/2	966.00	971.00	233.00
119	970.00	975.00	234.00
119 1/2	974.00	979.00	235.00
120	978.00	983.00	236.00
120 1/2	982.00	987.00	237.00
121	986.00	991.00	238.00
121 1/2	990.00	995.00	239.00
122	994.00	999.00	240.00
122 1/2	998.00	1003.00	241.00
123	1002.00	1007.00	242.00
123 1/2	1006.00	1011.00	243.00
124	1010.00	1015.00	244.00
124 1/2	1014.00	1019.00	245.00
125	1018.00	1023.00	246.00
125 1/2	1022.00	1027.00	247.00
126	1026.00	1031.00	248.00
126 1/2	1030.00	1035.00	249.00
127	1034.00	1039.00	250.00
127 1/2	1038.00	1043.00	251.00
128	1042.00	1047.00	252.00
128 1/2	1046.00	1051.00	253.00
129	1050.00	1055.00	254.00
129 1/2	1054.00	1059.00	255.00
130	1058.00	1063.00	256.00
130 1/2	1062.00	1067.00	257.00
131	1066.00	1071.00	258.00
131 1/2	1070.00	1075.00	259.00
132	1074.00	1079.00	260.00
132 1/2	1078.00	1083.00	261.00
133	1082.00	1087.00	262.00
133 1/2	1086.00	1091.00	263.00
134	1090.00	10	



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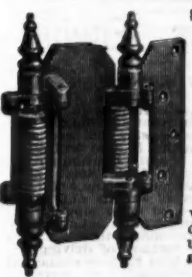
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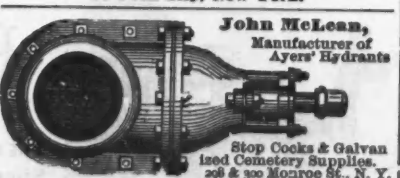
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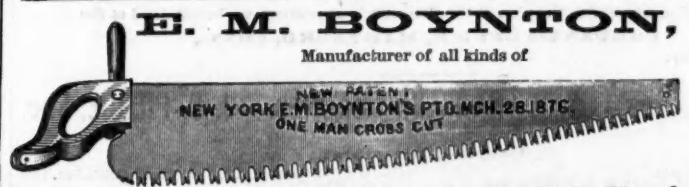
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The Emperor Dom Pedro, accompanied by Director General Gomborn, Superintendent Albert, and others,  
visited Machinery Hall at the Centennial on the evening of June 28th. Among other things inspected, at the  
invitation of E. M. BOYNTON, of New York, they witnessed a trial of the New Lightning Saw, patented March  
25, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in  
seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corlies, Morell, Lynch, and other  
members of the commission, witnessed the trial and timed the cutting. The Emperor remarked, "That  
was fast, very fast cutting." Last evening the Emperor made another examination of the saw.—Philadelphia  
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